mental health digest

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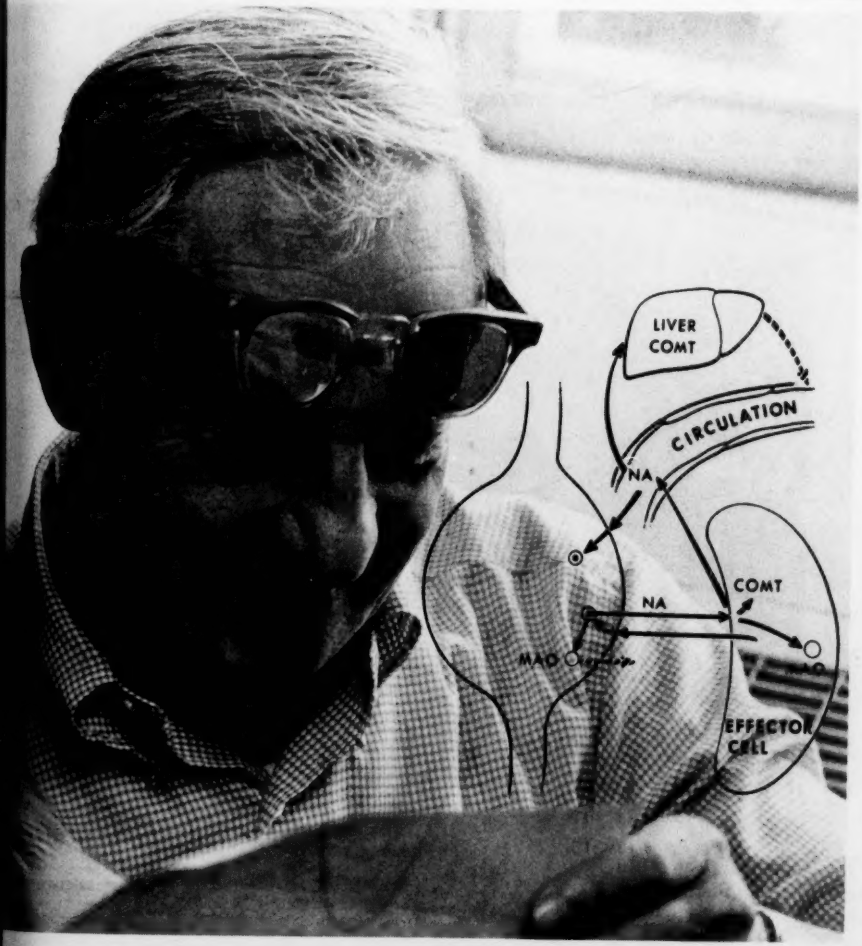

THE WHITE HOUSE

WASHINGTON

October 15, 1970

Dear Dr. Axelrod:

The news that you are among the recipients of this year's Nobel Prize in Medicine - Physiology is a source of great pride to all of your fellow citizens. The discoveries you and your associates at the National Institute of Mental Health have made, together with the findings of your distinguished colleagues, Sir Bernard Katz and Professor Von Euler, are brilliant examples of the outstanding efforts to improve the physical and mental health of mankind to which the United States is dedicated. I am delighted to have this opportunity to add my personal congratulations to the many others you are receiving.

With every good wish,

Sincerely,

Richard Nixon

Dr. Julius Axelrod
Chief of Section on Pharmacology
Laboratory of Clinical Science
National Institute of Mental Health
NIH Clinical Research Center
Building 10, Room 2D 47
Bethesda, Maryland 20014

cover story

Julius Axelrod, Ph.D., Nobel Laureate in Medicine 1970

Dr. Axelrod discovered that O-methylation is the major metabolic route for terminating the action of intravenously administered catecholamines, that uptake into the presynaptic neurone is the major means of inactivating the transmitter at the nerve endings, and that psychoactive drugs may act by inhibiting such uptake.

The chart shown with Dr. Axelrod on the cover depicts the fate of noradrenaline in sympathetic nerves and tissues.

The first digest in this issue is based on a presentation by Dr. Axelrod, summarizing the state-of-the-art in this field of research including his work as well as that of other scientists.

NEWS CONFERENCE—Dr. Bertram Brown, NIMH Director (left), and Dr. Axelrod discuss Dr. Axelrod's work and his reactions to the Nobel Prize announcement during a meeting with the press at the Institute. Dr. Axelrod will receive the prize in Stockholm December 10, 1970.

The Fate of Norepinephrine and the Effect of Drugs

JULIUS AXELROD

The catecholamines—epinephrine, norepinephrine, dopamine, and N-methylepinephrine occur in mammalian tissues. Epinephrine is highly localized in the adrenal medulla and exerts its effects mainly as a circulating hormone. Norepinephrine functions mainly as the neurotransmitter in the sympathetic nervous system and generally acts locally on effector cells. The function of dopamine is obscure, but it is found in certain regions of the telencephalon (neostriatum). Both norepinephrine and dopamine are believed to act as neurotransmitters in the central nervous system.

Biosynthesis—The amino acid precursor for catecholamine synthesis is tyrosine. This amino acid is transported into the sympathetic neurone or the chromaffin cell by a concentrating mechanism and it is then hydroxylated to form dihydroxphenylalanine (dopa). The enzyme, tyrosine hydroxylase, that carries out this reaction, requires a tetrahydropteridine cofactor and it is highly specific in that it will hydroxylate only l-tyrosine. The relatively low activity of this enzyme makes it the rate-limiting step in the synthesis of norepinephrine and thus it acts to regulate the synthesis of norepinephrine. Because of its low activity the tyrosine hydroxylase can be inhibited in vivo by the amino acid analog α-methyl-p-tyrosine. Thus the administration of this compound can almost prevent the synthesis of norepinephrine. As a result, the tissue levels of norepinephrine are rapidly depleted.

The next step is the decarboxylation of dopa to form dopamine. This reaction is catalyzed by the enzyme, aromatic l-amino acid decarboxylase. The enzyme is present mainly in the cytoplasm and requires pyridoxal phosphate as a cofactor. The decarboxylase enzyme is relatively nonspecific and can decarboxylase other aromatic amino acids such as 5-hydroxytryptophan and histidine to form the corresponding biogenic amines. The activity of aromatic amino acid decarboxylase (dopadecarboxylase) is difficult to inhibit completely because its activity is relatively high. It plays a negligible role in regulating the synthesis of norepinephrine.

Dopamine formed from dopa enters a vesicle in the sympathetic nerves that stores norepinephrine or the chromaffin granule in adrenergic medulla. When dopamine enters these granules, it is hydroxylated on the β position to form norepinephrine. This step is catalyzed by the enzyme, dopamine β-hydroxylase, in a reaction requiring ascorbic acid and oxygen. Many other phenylethylamines both normally occurring (e.g., tyramine) and foreign (e.g., amphetamine) can be β-hydroxylated by this enzyme.

Dopamine β-hydroxylase is localized in the norepinephrine storage granule, and dopamine formed in the cytoplasm must enter this granule before it is β-hydroxylated. Since norepinephrine can effect the entry of dopamine into the storage vesicle, this can serve as a regulatory mechanism for norepinephrine synthesis.

The final step is the N-methylation of norepinephrine to epinephrine. This step is carried out by the enzyme phenylethanolamine-N-methyltransferase. S-adenosylmethionine serves as the methyl donor in this reaction. Besides norepinephrine, this

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enzyme can N-methylate other β-hydroxylated phenylethylamine derivatives including normetanephrine, octopamine, and even drugs such as norephedrine and amphetamine. The synthesis of phenylethanolamine-N-methyltransferase in mammals is under control of the corticoids arising from the adrenal cortex. Removal of the pituitary causes a profound reduction in the epinephrine-forming enzyme ACTH and large amounts of corticoids can restore the enzyme activity.

Metabolism.—The catecholamines are metabolized via two main pathways, one involving deamination by monoamine oxidase and the other O-methylation by catechol-O-methyltransferase.

Monoamine oxidase is widely distributed throughout the body but it is highly concentrated in liver, kidney, and brain. It is localized in the mitochondria and perhaps in other subcellular particulates. Monoamine oxidase is also present in sympathetic neurones where it serves to regulate the levels of stored norepinephrine. The enzyme is relatively nonspecific; it can deaminate many alkyl and aromatic amines, including norepinephrine, epinephrine, and dopamine to the corresponding aldehyde. Many amines of biologic and therapeutic interest are substrates of monoamine oxidase. In vitro and in vivo monoamine oxidase acts on amines which have an amino group attached to the terminal carbon atom; secondary amines are deaminated as rapidly as the corresponding primary amines. Phenylethylamines in which the amino group is not attached to a terminal carbon atom are not deaminated by the enzyme (e.g., ephedrine, amphetamine). Monoamine oxidase more readily deaminates phenylethylamine derivatives which lack β-hydroxy substituted group. Thus, dopamine is a better substrate for this enzyme than norepinephrine and epinephrine.

Catechol-O-methyltransferase is the other major enzyme concerned with the metabolism of catecholamines. This enzyme transfers the methyl group of S-adenosylmethionine to the meta hydroxy group of catechols. The presence of Mg^{++} is also required to carry out this reaction. This enzyme can O-methylate any catechol in which the two hydroxy groups are adjacent on the aromatic ring. The O-methylating enzyme is widely distributed in all tissues but it is most abundant in liver and kidney. Catechol-O-methyltransferase is present mainly outside the neurone and is believed to be associated with the adrenergic receptor. Several competitive inhibitors have been found for this enzyme including pyrogallol and tropolone. The administration of catechol-O-methyltransferase inhibitors slightly prolong the physiological actions of catecholamines while monoamine oxidase inhibitors have negligible effects. When both enzyme inhibitors are given together the physiologic effects of norepinephrine and epinephrine are still rapidly terminated indicating that there are other mechanisms for their inactivation.

Norepinephrine undergoes a different fate depending upon whether it is liberated into the blood stream or from the sympathetic nerve terminal onto tissues. When radioactive epinephrine is injected intravenously into man, only small amounts of the catecholamine are excreted unchanged, indicating that it is almost completely transformed in the body. The major metabolites are O-methylated products, free and conjugated metanephrine, 3-methoxy-4-hydroxymandelic acid, and 3-methoxy-4-hydroxyphenylglycol. Negligible amounts of the deaminated catechol 3, 4-dihy-

droxymandelic acid are excreted. This indicates that the principal metabolic pathway for circulating epinephrine is O-methylation, this process taking place mainly in the liver. The O-methylated amine is then deaminated by monoamine oxidase to form the aldehyde intermediate. In man, the major fraction of the aldehyde is oxidized to 3-methoxy-4-hydroxymandelic acid (VMA) and a smaller portion is reduced to 3-methoxy-4-hydroxyphenylglycol.

The norepinephrine in tissues is present in sympathetic nerves, and is metabolized mainly by monoamine oxidase within the nerves. The inactive deaminated product leaves the neurone and is then O-methylated. The main products of endogenous norepinephrine in the urine are VMA and 3-methoxy-4-hydroxyphenylglycol. These metabolites are derived mainly from norepinephrine metabolized within the sympathetic nerves. Smaller amounts of free and conjugated (nor) metanephrine are normally present in urine. These compounds are formed mainly from the norepinephrine released from sympathetic nerves or epinephrine secreted from the adrenal medulla.

The fate of the norepinephrine in the sympathetic nervous system—The sympathetic neurone consists of a cell body, preterminal axon, and the nerve ending. The terminals are highly branched and have beaded swellings or varicosities along the nerve. At the nerve terminal the concentration of norepinephrine reaches 10 mg./g. while in the cell body of axons the concentration is only about 100 μg./g. The varicosities in the nerve terminal contain dense core membrane bound vesicles of about 500A which serve to store the neurotransmitter. The nerve terminals are interwoven in the tissues forming a rich plexus. By means of the swellings on the nerve terminals each neurone can make synaptic contact with many thousand effector cells.

When radioactive norepinephrine is injected into the blood stream, it is taken up by tissues rich in sympathetic fibers. The chronic denervation of the sympathetic nerves results in a negligible accumulation of radioactive norepinephrine indicating that the catecholamines are selectively taken up by the postganglionic nerve terminal. This process requires an active transport of the amine and an optimal concentration of Na^{++} and K^{+} ions. When the norepinephrine crosses the axonal membrane of the sympathetic nerve into the axoplasm, it is rapidly taken up into the dense core vesicle where it is stored in a physiologically inactive form. This process of uptake and retention by the sympathetic nerves serves as the rapid and effective means for inactivating norepinephrine.

Since the norepinephrine is selectively taken up and stored in the sympathetic neurone, the neurotransmitter can be labeled and its fate studied by the intravenous injection of H^3-norepinephrine of high specific activity. The spleen was perfused with blood from a donor cat. After stimulation of the splenic nerve, H^3-norepinephrine and its metabolites were measured in the venous outflow. There is a marked elevation in the norepinephrine concentration in the venous outflow after each stimulation. An increase in the amounts of the O-methylated metabolite are also present after each stimulation but no deaminated products are detected. These experiments demonstrate that the norepinephrine liberated from the nerve ending of the spleen is inactivated by several mechanisms: part of it is discharged into the blood stream and carried away; part is O-methylated by catechol-O-methyl-

transferase, and the major fraction returns to the nerve where it is rebound and stored again. A fraction of the stored norepinephrine is continuously leaving the storage vesicle. Most of the catecholamine is inactivated by deamination within the neurone by monoamine oxidase.

Effect of adrenergic drugs on the disposition of norepinephrine—Drugs that affect the adrenergic nervous system may exert their actions by interfering with the uptake across the neuronal membrane, the storage in the vesicles in the neurone, or the release of norepinephrine. Drugs such as cocaine, imipramine, and sympathomimetic amines, prevent the entry of norepinephrine into the sympathetic neurone. Thus these drugs increase the response of the catecholamine by interfering with its inactivation by binding, which allows more of the pressor agent to react with the receptor. The supersensitivity resulting from chronic denervation of the sympathetic nerves may be explained in part by a similar mechanism. The degeneration of the sympathetic nerves destroys an important means for the inactivation of norepinephrine binding. In the absence of the nerves more of the catecholamine is available to stimulate the effector cells.

Sympathomimetic amines such as tyramine and amphetamine release the bound norepinephrine from the storage vesicles. This causes a rise in blood pressure. Consequently these drugs produce their pressor effects indirectly by liberating norepinephrine. Certain drugs such as reserpine abolish the ability of the vesicle to bind norepinephrine. This results in a marked depletion of the stores of norepinephrine of tissues. Though both sympathomimetic amines and reserpine reduce the content of the catecholamines in tissues, they appear to do this by different mechanisms. The sympathomimetic amine, tyramine, rapidly releases norepinephrine so that it leaves the nerve terminal in a physiologically active form and then it is metabolized mainly by O-methylation. Reserpine appears to liberate the stored norepinephrine slowly so that it is more easily deaminated by monoamine oxidase within the neurone. Hence the norepinephrine discharged by reserpine leaves the neurone as the physiologically inactive product. After repeated administration of sympathomimetic amines, their effects are diminished. This phenomena, tachyphylaxis, is due to the gradual exhaustion of the catecholamines in the nerves caused by these amines. After the administration of small amounts of norepinephrine the response returns.

The storage vesicle not only binds norepinephrine but also other related compounds. For example, epinephrine, octopamine (β-hydroxylated tyramine) and several β-hydroxylated phenylethylamine derivatives can displace norepinephrine in the storage granules. Nerve stimulation can liberate these compounds so that they serve as "false neurotransmitters." Certain drugs may also prevent the release of norepinephrine from the nerve. Ganglionic blocking agents and preganglionic denervation retard the spontaneous release of norepinephrine.

Catecholamines in the central nervous system—Norepinephrine is unequally distributed in the mammalian central nervous system. The brain has a complex system of neurones that contain the biogenic amines norepinephrine, dopamine, and serotonin. All the enzymes necessary for the synthesis of the catecholamines have been found in the brain. In addition, catechol-O-methyltransferase and monoamine oxidase are also present in the brain. Since catecholamines cannot

cross the blood-brain barrier, the biosynthesis and fate of norepinephrine and dopamine were studied after the injection of precursors of the catecholamines into the lateral ventricle of the brain. The injection of C^{14}-tyrosine, dopa, or dopamine led to the rapid formation of norepinephrine. After the introduction of H^3-norepinephrine in the brain, normetanephrine and the 3-methoxy-4-hydroxyphenylgylcol are formed. Considerable portions of the norepinephrine taken up by the brain tissues are retained and slowly released. The H^3-norepinephrine is localized mainly in the "pinched-off" nerve endings similar to endogenous norepinephrine. An examination of the uptake of H^3-norepinephrine in various regions of the brain shows an unequal localization similar to that of the endogenous catecholamines. Intense labeling is observed in the periventricular and ventromedial nucleus of the hypothalamus, the medial forebrain bundle, and in specific tracts of the spinal cord apical dendritic layer of the hippocampus. The corpus striatum, which selectively stores dopamine, is also labeled with norepinephrine. With the use of H^3-norepinephrine as well as other techniques, marked differences in the rate of turnover of norepinephrine in various areas of the brain can be demonstrated. The cerebellum has the fastest turnover, medulla oblongata and hypothalamus the slowest, and cortex and hippocampus are in between.

The accumulation of norepinephrine in the adrenergic structures of the brain involves transport across the neural membrane (uptake) and subsequent uptake and retention in the intraneural storage granules (binding). Compounds such as imipramine interfere with the uptake of norepinephrine across the central adrenergic neural membrane. Other antidepressant drugs such as desmethyl-imipramine and amitriptyline also reduce the accumulation of norepinephrine in the brain, but structurally related derivatives of imipramine, clinically inactive as antidepressants, have no effect. The antidepressant drugs may act by preventing the reuptake of the released neurotransmitter and making more norepinephrine available to react with the adrenergic receptors. Imipramine and chlorpromazine also slow the spontaneous release of norepinephrine in neurones of the brain. Amphetamine has many actions on norepinephrine in the brain. It blocks the uptake of norepinephrine across the neuronal membrane. It also releases the bound norepinephrine in a physiologically active form, and is an effective inhibitor of monoamine oxidase in the brain. Neither amphetamine nor imipramine has any effect on the uptake of dopamine in central adrenergic neurones.

Reserpine reduces the accumulation of H^3-norepinephrine in the brain. It appears to act by releasing the norepinephrine from the intraneural storage vesicles. The liberated norepinephrine is then deaminated by monoamine oxidase within the neurone so that it leaves the nerve as an inactive metabolite. Reserpine causes a marked depletion of endogenous norepinephrine in the brain and tissues. The behavioral effects of reserpine are restored within a few days while the endogenous norepinephrine rises slowly over several weeks. The ability to retain small amounts of H^3-norepinephrine injected into the lateral ventricle of the rat brain recovers between 24–48 hours after reserpine treatment, and the rat recovers from the most obvious behavioral effects. The behavioral effects of reserpine appear to be related to the recovery of the uptake process not the levels of the catecholamine.

Alcohol Abuse and Alcoholism

". . . And malt does more than Milton can to justify God's ways to man. Ale, man, ale's the stuff to drink, for fellows whom it hurts to think," wrote the poet Housman. And along with ale there is applejack, beer, bitters, bourbon, brandy, gin, kirsch, mead, pombe, porter, pulque, rum, saki, stout, tequila, vodka, and whisky. Also, amondillado, canary, champagne, claret, malmsey, muscatel, port, sack, sauterne, sherry, and vermouth. As well as anisette, cassis, curacao, kümmel, and ouzo. And of course, collinses, coolers, fizzes, flips, highballs, juleps, martinis, possets, purls, rickeys, slings, smashes, sours, stingers, swizzles, and wassails. There seems to be no human society in which some kind of alcoholic beverage is not used. But, as is all too well known, the same alcohol that bestows comfort and joy and relief from pain, also gives man one of his most serious problems.

In the past, the problem has been considered mainly in a moral and legal context. Drinking alcohol, and especially drinking too much alcohol, has been viewed as an evil reprehensible act, and even today one can be tossed into a jail for drunkenness. But more and more, it is being accepted that abuse of alcohol and alcoholism should be regarded as an illness, an "addiction," and therefore as a massive public health problem.

Division of Alcohol Abuse and Alcoholism

The recent establishment of a Division of Alcohol Abuse and Alcoholism within the National Institute of Mental Health marks the beginning of a major thrust by the Federal government to come to grips in a practical, realistic, and more effective way of dealing with the age-old problems of alcohol abuse and alcoholism.

The NIMH has for many years been concerned with problems of alcoholism, and has supported and carried out research, training, and service programs. During the past few years, its National Center for the Prevention and Control of Alcoholism has been the focal point for these activities. Now, with the new Division, the entire program is strengthened and expanded.

The ultimate objective of the new Division can be stated in blunt and forceful terms: the eradication of alcohol abuse and alcohol problems in the United States. The new Division will carry out a variety of functions in mounting a vigorous and intensive effort to combat what the DHEW Assistant Secretary for Health and Scientific Affairs has called our "number one" health problem. The functions are:

1. Plan and develop programs of research, training, community services, and public education for prevention and control of alcoholism.
2. Conduct and support research on the biological, environmental, and social causes of alcohol abuse and alcoholism.
3. Support the training of professional and paraprofessional personnel in alcoholism.
4. Support the development of community facilities and services for alcoholics and problem drinkers.
5. Collaborate with other Federal agencies, National, State, and local organizations, and voluntary groups to facilitate and extend programs for the prevention of alcoholism and for the care, treatment, and rehabilitation of alcoholics.
6. Coordinate and stimulate statistical and biometric programs necessary for epidemiological and longi-

tudinal studies for alcohol usage and alcoholism.

7. Stimulate the communication of appropriate informational and educational material through the development of conferences, committees, publications, and use of public media.

The Division, as the Center before it, will have both an "extramural" and an "intramural" program. A brief review of some of the recent activities in these two programs will illustrate the multifaceted approach to be emphasized by the Division.

As an introduction to this review, it can be stated that there is consensus that alcoholism results from a complex interaction of social, psychological, and biological factors. Even the most enthusiastic proponents of any specific theory of the causation of alcoholism agree upon the significance of an eclectic approach. Consequently, an adequate conceptualization of alcohol addiction must encompass a wide variety of biological, psychological, and social factors—and clarification of the relevant significance of these factors requires that research, training, and service carried out within a single discipline must relate to programs conducted within other disciplines. The extramural and intramural programs in alcoholism reflect this holistic interrelated approach.

Extramural Program

Research Grants

The research grants represent the largest part of the extramural program. They can be categorized into grants for "centers," biological studies, clinical studies, community research studies, behavioral studies, prevention and education, and epidemiological studies. A listing of these research projects will show the wide variety of problems under study.

"Center" grants—The center grants all have the following features:

1. Research is multidisciplinary, with integration of basic and clinical science, including psychiatry, social psychology, experimental psychology, biochemistry, neurophysiology, and other medical subspecialties such as cardiology and gastroenterology.

2. All centers conduct an active program of research training at the postdoctoral level in medicine and the basic sciences disciplines.

3. The centers are located in geographical areas which have a high endemic incidence of alcoholism. The establishment of centers in these areas provides more incentive for training, research, and service by virtue of the stimulus they offer to the university and the community at large.

4. All the centers are associated with, or have a close liaison with, universities and medical schools which have demonstrated excellence in carrying out research and treatment for many disease entities.

5. The centers have a wide geographical distribution within the United States.

6. The principal investigators and project directors are distinguished scientists who have carried out research of high quality in the field of alcoholism.

The following centers are being supported:

Center for Alcohol Studies (Rutgers University)

Alcoholism and Research and Research Training (Washington University School of Medicine)

Psychological and Metabolic Factors in Alcoholism (The Johns Hopkins University School of Medicine)

Physiopathology and Alcohol Dependence (Texas Research Institute for Mental Sciences)

The Oklahoma Center for Alcohol-Related Studies (University of Oklahoma Medical Center)

Experimental and Clinical Studies in Alcoholism (Downstate Medical Center, Brooklyn)

Biological studies—The large number of grants in this area probably reflects the belief of many researchers that better understanding of the causation of alcoholism and its medical treatment will come from new knowledge of the effects of alcoholism on biological and biochemical mechanisms. These grants include studies on:

Metabolism of Ethyl Alcohol
Metabolism of Aliphatic Alcohols
Patterns of Drug and Environmental Toxicity
Acetaldehyde Metabolism in Alcoholic Brain Syndrome
Role of Acetaldehyde in the Actions of Ethanol
Cholinergic Implications of Ethanol Intoxication
Effects of Alcohol on Erythropoiesis
Effects of Ethyl Alcohol on Related Studies
Neurochemical Basis of Alcohol Abstinence Syndrome
Pathogenesis and Treatment of Alcohol-Induced Diseases
Influence of Alcohol on Stomach Functions
Induction of Alcohol Intolerance by Cyanamide
Effects of Alcohol on Amine Metabolism Within the CNS
Biochemical Mechanisms of Drug Reactions to Ethanol
Induced Lipemia and Anemia
Altered Fatty Acid Ester Metabolism with Ethanol
Chronic Intake and Withdrawal of Alcohol in Animals
The Effect of Fructose on Ethanol Metabolism
Atypical Human Liver Alcohol Dehydrogenase
Effect of Ethanol on Single Brain Cell Activity
Effects of Alcohol on Liver and Intestines
Human and Experimental Alcoholic Myopathies
Alcoholism and Diseases of the Heart
Catecholamine-Derived Alkaloids in Alcoholism
Alcoholics and Chronic Liver Disease
Testing of a Portable Economical Drunkometer
Alcoholism and Intestinal Malfunction
Physiological Role of ADH and Ethanol-Specific Action
Effect of Ethanol on Hepatocellular Metabolism
Alcohol and the Development of Tolerance
Psychiatric Illness in Adopted Children of Alcoholics
Respiratory-Depressive Effect of Ethanol
Neurochemical and Pharmacological Studies of Alcoholism
Ethanol and the Mechanism of Electrolyte Transport
Pathogenesis of Ethanol-Induced Fatty Liver
Effect of Alcohol upon Amino Acid Transport

Clinical studies—Clinical investigations into the medical status of alcoholics and the effects of alcohol on biomedical functions complement the biological studies. The primary objectives of these studies are to obtain information concerning the medical status of alcoholics as well as information relative to improved diagnosis and treatment. The grants are:

Identification and Analysis of Alcoholism Patterns
Compulsory Treatment of the Alcoholic Court Offender
Metabolic Studies in Patients with Severe Alcoholism
Relation Between Alcoholism and Nutritional Disease
Effect of Chronic Alcohol Administration on the Heart
Relationship-Enhancement with Alcoholic Patients
Drug Metabolism and Absorption in Alcoholics
Aversive Conditioning with Alcoholics
Androgens and Alcoholism
Implosive Therapy in the Treatment of Alcoholics
Adrenal Function in Alcoholism
An Operant Behavior Modification Program for Alcoholics
Alcohol and its Metabolic Effects
Avoidance Conditioning of Alcoholics

Community research studies—Because of the limited nature of many treatment programs, new and innovative service programs in a community setting are badly needed. Priority is given to projects with wide applica-

bility, and careful evaluation is given to their feasibility. Grants with this goal are:

The Social Reintegration of Homeless Alcoholics
Development of Alcoholism Services in Public Health
Impact of an Alcoholism Referral Service on Users
Alcoholic Followup Study
Correlates of Incarceration and Drinking
Drinking Patterns of the Arizona Yavapai

Behavioral studies—The behavioral-psychological concomitants of alcoholism cannot be neglected. There is also an urgent need to develop an animal model of alcohol addiction. Grants to study the behavioral effects of alcohol are:

Stress and Pain Avoidance Through Ethanol Ingestion
Self-Maintenance of Alcohol Intoxication
Chronic Alcohol Consumption in Primates
Alcohol Effects on Behavior
Ethanol Studies in Inbred Strains of Mice
Beverage Alcohol and Perceptual-Cognitive Behavior
Analysis of Effects of Alcohol in the Brain
Aversive Conditioning Techniques with Alcoholics
Crowding Stress and Voluntary Alcohol Intake in Rats
Effects of Alcohol on Selective Attention
Ethanol Effects on Motor Control and on Polydipsia
Alcohol Consumption: Pilot Studies of a New Approach
A Markov Process Model for Alcoholic Symptoms

Prevention and education—While treatment activities are needed to relieve suffering and promote restoration of psychological and social functioning, alcoholism and other drinking problems will never be effectively reduced or controlled through treatment alone. Only as preventive methods are developed can these objectives be achieved. Prevention is a relatively underdeveloped field, and the Division will be expanding its program in this direction. Public education is one important approach to prevention that has not yet been explored in any depth. Present grants in this area are concerned mainly with the onset of drinking by adolescents and youth:

Adaptation of Adolescents to Paternal Alcoholism
Socialization of Problem Behavior in Youth
Genesis of Problem and Normal Drinking in Adolescents

Epidemiological studies—A study on "Drinking Behavior and Drinking Problems" is being conducted with special concentration upon the residents of metropolitan areas and larger cities and towns. This population was selected because previous research has shown that it has the highest risk of problem drinking. This research is expected to provide baseline data on a general population and to identify those factors that influence patterns of alcohol use so that problems associated with drinking can be more effectively studied. Preliminary data indicate that there is considerable turnover in persons who are problem drinkers, as defined by the investigators.

Training and Fellowship Grants

Training—The major objective of the training program is to increase the supply of manpower trained to treat, cure, and eventually prevent alcoholism. The program focuses on the following target groups: students in professional schools, such as medicine, social work, nursing, and in graduate and undergraduate departments, such as psychology and sociology; a small cadre of alcohol problem specialists and experts to take leadership roles in training, research, public education, and administration; hospital staffs and practitioners through a program of continuing education on the treatment of alcoholics; alcoholism counselors to function in clinical and coordinating roles;

volunteers and community leaders to function in a variety of programs and settings such as on boards, fund-raising activities, and providing direct services to alcoholics. The training grants are:

Training Social and Behavioral Scientists in Alcoholism
Training Program for Alcoholism Counselors
Training of Community Caretakers to Help Alcoholics
Leadership and Professional Training in Alcoholism
National Alcoholism Training Program—Professionals
Interdisciplinary Alcoholism Education
Berkeley Center for Alcohol Studies
Alcoholism Teaching in a Behavioral Science Program
Training Program for Lay Counselors on Alcoholism
Hospital Care of the Alcoholic
Alcoholism Educational Program
Social Work Training in Alcoholism
Teaching Materials for Social Work Education on Alcohol
Alcoholism Treatment Training for Paraprofessionals
Murray State University Center for Alcohol Education
Counselors for the Alcoholic
Administration of Mental Health Facilities
Short-Term Training in Alcoholism
Prevention and Control of Alcoholism
Social Work—Alcoholism

Fellowships—Young researchers are being encouraged to enter the field of alcoholism by providing a few grants to support directly their training and education or independent research. These grants are:

Psychopharmacological Study of Chronic Stressors
Navajo Drinking: An Aspect of Culture Conflict
Etiological Studies of Alcoholism

Improving Treatment Services

Community assistance program—A great deal of attention has been given recently to assisting communities to develop and improve their treatment services for alcoholics. Public Laws 90–574 and 91–211 amended the Community Mental Health Centers Act and authorized assistance to communities through Federal matching grants to develop comprehensive community service programs for the treatment of alcoholism. Public Law 91–211 provides special financial incentives for comprehensive service for alcoholics. This means that there can be a higher percentage of Federal participation in costs than that mandated for general mental health services. This new legislation also provides for higher Federal matching percentages in poverty areas, for planning grants, for special consultation grants, and for direct grants in the areas of training and demonstration projects. Treatment and rehabilitation services for alcoholics have been sadly lacking. Over the next several years development of the national network of community-based services should do much to relieve the suffering of millions of victims of alcoholism.

Part of the development plan calls for collecting standardized clinical data, a plan that will permit an evaluation at the national level of the effects of treatment of alcoholics. The data collection system will include information on the type and length of treatment services and will also yield data on demographic, social, and psychological characteristics of the patient population.

Another activity is the Architectural-Alcoholism Joint Project to study and develop guidelines for construction and renovating alcoholism treatment facilities.

The chronic drunkenness offender—Police blotters throughout the nation are still filled with arrests for drunkenness. How to handle these cases is an urgent problem. Studies of alcoholism and the law are underway,

bility, and careful evaluation is given to their feasibility. Grants with this goal are:

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Prevention and education—While treatment activities are needed to relieve suffering and promote restoration of psychological and social functioning, alcoholism and other drinking problems will never be effectively reduced or controlled through treatment alone. Only as preventive methods are developed can these objectives be achieved. Prevention is a relatively underdeveloped field, and the Division will be expanding its program in this direction. Public education is one important approach to prevention that has not yet been explored in any depth. Present grants in this area are concerned mainly with the onset of drinking by adolescents and youth:

Adaptation of Adolescents to Paternal Alcoholism
Socialization of Problem Behavior in Youth
Genesis of Problem and Normal Drinking in Adolescents

Epidemiological studies—A study on "Drinking Behavior and Drinking Problems" is being conducted with special concentration upon the residents of metropolitan areas and larger cities and towns. This population was selected because previous research has shown that it has the highest risk of problem drinking. This research is expected to provide baseline data on a general population and to identify those factors that influence patterns of alcohol use so that problems associated with drinking can be more effectively studied. Preliminary data indicate that there is considerable turnover in persons who are problem drinkers, as defined by the investigators.

Training and Fellowship Grants

Training—The major objective of the training program is to increase the supply of manpower trained to treat, cure, and eventually prevent alcoholism. The program focuses on the following target groups: students in professional schools, such as medicine, social work, nursing, and in graduate and undergraduate departments, such as psychology and sociology; a small cadre of alcohol problem specialists and experts to take leadership roles in training, research, public education, and administration; hospital staffs and practitioners through a program of continuing education on the treatment of alcoholics; alcoholism counselors to function in clinical and coordinating roles;

volunteers and community leaders to function in a variety of programs and settings such as on boards, fund-raising activities, and providing direct services to alcoholics. The training grants are:

Training Social and Behavioral Scientists in Alcoholism
Training Program for Alcoholism Counselors
Training of Community Caretakers to Help Alcoholics
Leadership and Professional Training in Alcoholism
National Alcoholism Training Program—Professionals
Interdisciplinary Alcoholism Education
Berkeley Center for Alcohol Studies
Alcoholism Teaching in a Behavioral Science Program
Training Program for Lay Counselors on Alcoholism
Hospital Care of the Alcoholic
Alcoholism Educational Program
Social Work Training in Alcoholism
Teaching Materials for Social Work Education on Alcohol
Alcoholism Treatment Training for Paraprofessionals
Murray State University Center for Alcohol Education
Counselors for the Alcoholic
Administration of Mental Health Facilities
Short-Term Training in Alcoholism
Prevention and Control of Alcoholism
Social Work—Alcoholism

Fellowships—Young researchers are being encouraged to enter the field of alcoholism by providing a few grants to support directly their training and education or independent research. These grants are:

Psychopharmacological Study of Chronic Stressors
Navajo Drinking: An Aspect of Culture Conflict
Etiological Studies of Alcoholism

Improving Treatment Services

Community assistance program—A great deal of attention has been given recently to assisting communities to develop and improve their treatment services for alcoholics. Public Laws 90–574 and 91–211 amended the Community Mental Health Centers Act and authorized assistance to communities through Federal matching grants to develop comprehensive community service programs for the treatment of alcoholism. Public Law 91–211 provides special financial incentives for comprehensive service for alcoholics. This means that there can be a higher percentage of Federal participation in costs than that mandated for general mental health services. This new legislation also provides for higher Federal matching percentages in poverty areas, for planning grants, for special consultation grants, and for direct grants in the areas of training and demonstration projects. Treatment and rehabilitation services for alcoholics have been sadly lacking. Over the next several years development of the national network of community-based services should do much to relieve the suffering of millions of victims of alcoholism.

Part of the development plan calls for collecting standardized clinical data, a plan that will permit an evaluation at the national level of the effects of treatment of alcoholics. The data collection system will include information on the type and length of treatment services and will also yield data on demographic, social, and psychological characteristics of the patient population.

Another activity is the Architectural-Alcoholism Joint Project to study and develop guidelines for construction and renovating alcoholism treatment facilities.

The chronic drunkenness offender—Police blotters throughout the nation are still filled with arrests for drunkenness. How to handle these cases is an urgent problem. Studies of alcoholism and the law are underway,

examining the current laws and legal issues relating to treatment of alcoholism and intoxicated individual. A model statute has been drawn up that can be used by States as a guide in establishing more humane and effective alternatives to the present system of handling public drunkenness offenders.

Alcoholics in the work setting—The Division has major responsibilities for developing and implementing an enlightened personnel policy program on alcoholism and problems of drinking among employees. Examples of activities are preparation of a draft proposal for implementing a program for DHEW employees with drinking problems, and collaborative efforts with the Civil Service Commission and the Division of Federal Employee Health, DHEW. Staff of the Division are also working with representatives of management, the unions, military organizations, and many public voluntary agencies and interested citizens.

Drinking and driving—The combination of alcohol and accidents is another gigantic public health problem. The Division staff is actively involved with the Federal Highway Safety Bureau of the Department of Transportation and other agencies, especially in research projects on the drinking driver, as well as programs for treatment and prevention.

Services for Indians—Problems of policies and practices regarding use of alcohol by American Indians are as old as the nation itself. The Division is working with the Bureau of Indian Affairs of the Department of the Interior and the Indian Health Service of DHEW to develop an effective program for dealing with serious drinking problems among various Indian groups, particularly those in Alaska. It is also working very closely with the Indian Health Service to set up services for the Navajo Indian with drinking problems, especially those who are regularly arrested on the charge of public intoxication, and with the National Indian Council on Alcohol and Drugs.

Education and Public Information

Problems of the magnitude of alcoholism can never be brought under control by treatment efforts alone. Education and public information are therefore highly significant parts of the Division's work. These include consultation, numerous publications, exhibits, and conferences, and radio and television presentations. Over a million copies of a publication "Thinking About Drinking," written for teenage audiences have been distributed to school officials, parent-teacher and youth organizations. Another publication is "Alcohol and Alcoholism," which has also been distributed widely, and recently has been translated into Japanese and distributed by the Japanese Society for Prevention of Alcoholism.

Intramural Program

The intramural research program is conducted primarily at St. Elizabeths Hospital and is directed toward clarification of the nature of the addictive process in alcoholism. The experimental program is based upon the premise that the biological bases of addiction are associated with neurochemical, metabolic, and neurophysiological correlates of behavior, and is concerned with the analyses of the basic biological, behavioral, and biochemical correlates of alcoholism in man and animals.

The research paradigm used on a metabolic ward permits concurrent study of the biochemistry and behavior of alcoholic individuals prior to, during, and following a period of

experimentally induced intoxication. Alcohol administration is programed (i.e., given in divided doses around the clock), or the subject is allowed freely to determine the volume and frequency of his alcohol administration.

An important reason for the experimental study of drinking patterns and behavior of chronic alcoholics is systematically to determine the many diffuse and untested assumptions about how and why an alcoholic drinks. These assumptions, derived for the most part from the retrospective reports of alcoholics made during intervals of sobriety, have persisted virtually unchallenged and form the basis of most therapeutic approaches to the treatment of alcohol-related illnesses. The validity of inferences based on a patient's retrospective report of a drinking experience may be affected by deliberate and unintentional distortions and by the patient's inability to recall and adequately verbalize his reactions to alcohol. For example, it is almost universally believed that one of the important effects of alcohol is anxiety reduction, transient alleviation of depression, and facilitation of overt psychopathological behavior. Data obtained in the intramural research program show that alcohol ingestion may *increase* anxiety and depression in alcoholic subjects.

Intensive study of the alcoholic individual should result in development of hypotheses which can be tested most appropriately in the experimental animal. Before this can be done, it will be necessary to develop an animal preparation that shows tolerance for and dependence on alcohol. Only an animal preparation will permit study of the developmental sequence and action of possible neurochemical, neurophysiological, and metabolic factors which are concomitants of alcohol addiction.

The goal is to contribute toward a conceptualization of alcoholism that considers both the biological and behavioral determinants of the illness.

Not too many years ago, alcoholism as a field of research, training and service was shunned by most scientists, practitioners, and the general public. Indeed, qualified biochemical, behavioral, and social scientists had to be persuaded to participate in alcohol-related endeavors. All this is changing rapidly. Creation of the new Division is one sign of the increased dedication of the people of the United States to solve the immense and complex problem of alcohol abuse and alcoholism.

Biologic Concomitants of Alcoholism

JACK H. MENDELSON

The study of the heterogeneous persons designated as "alcoholics" is a relatively new undertaking. Until recently, most alcohol-related problems were perceived as a moral issue, and alcoholism was not an appropriate subject for laboratory or clinical investigation.

We are confronted with a major public health problem that affects the lives of over 8,000,000 Americans. This report examines the aspects of alcohol metabolism and the biological concomitants of excessive alcohol use that may contribute to our understanding of the natural history of alcohol addiction.

There is relatively poor consensus concerning a definition of alcoholism. As with most diseases that are expressed primarily as behavior disorders, many social and environmental contingencies affect the definition. Perhaps the most widely accepted definition is that it is a disorder characterized by excessive drinking that results in injury to a person's health or social function or both. There is a wide latitude for assigning an acceptable degree of variance or deviance in social function associated with alcohol consumption. The clinical investigator often finds definitions that involve social criteria difficult to use for establishing replicable procedures for subject selection in clinical and laboratory research. Therefore, many investigators have employed pharmacologic criteria of addiction for selection and description of their subjects. These criteria for alcohol addiction are the same as those employed for other addictive disorders—tolerance and physical dependence.

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Tolerance

After repeated ingestion, a dose of alcohol tends to produce a decreasing degree of affect, i.e., increasing dosage must be used to give effects obtained with the original dose. The biochemical mechanisms subserving increased tolerance are unknown, but two possible factors have been postulated: an enhanced rate of degradation of ethanol (metabolic tolerance); and increased degree of cellular adaptation to ethanol in the central nervous system.

Metabolic Tolerance

Metabolism of alcohol—Until recent interest in microsomal oxidase systems, it was believed that alcohol dehydrogenase was the major enzyme responsible for catalyzing 90 to 98 percent of the initial oxidation of ethanol to acetaldehyde in liver. Hepatic alcohol dehydrogenase is a zinc-containing enzyme found mainly in the soluble fraction of liver cells. It has a pH optimum of 10.4 and is nicotinamide adenine dinucleotide (NAD) dependent.

Another hepatic enzyme system has been implicated as having an important role in the oxidation of ethanol to acetaldehyde—a hepatic microsomal ethanol-oxidizing system that appears similar to drug-metabolizing enzymes found in liver. This microsomal oxidase system is dependent on reduced nicotinamide adenine dinucleotide phosphate (NADPH) and has a pH optimum of 7.2. A number of experiments have demonstrated cross-induction of hepatic microsomal

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enzymes with alcohol and a variety of drugs, and a number of drugs that are metabolized by the microsomal system may show altered metabolism in alcoholics. An enhanced rate of metabolism of warfarin, diphenylhydantoin, and tolbutamide occurs in heavily drinking subjects. The administration of alcohol induces proliferation of hepatic smooth endoplasmic reticulum, which is believed to be the ultrastructural site of the microsomal oxidizing system. Ethanol administration to rats was associated with increases in activity of the microsomal oxidase system of as much as 200 percent but with no significant change in alcohol dehydrogenase (ADH) activity. Pyrazole, an inhibitor of ADH, does not block an induced enhancement in blood alcohol clearance in ethanol-treated animals.

Administration of ethanol for 12 days to normal nonalcoholic volunteers in doses sufficient to produce blood alcohol levels of 80 mg. per 100 ml. resulted in a significant induction of hepatic pentobarbital hydroxylase activity. This suggests a mechanism for explaining the cross-tolerance that alcoholics exhibit for sedative, hypnotic, and anesthetic agents when they are not intoxicated. However, high concentrations of alcohol appear to depress the activity of the microsomal oxidase system. Whereas sober addicts may show cross-tolerance, heavily intoxicated alcoholics might metabolize a variety of drugs more slowly than normal subjects. This phenomenon may reflect the metabolic basis for the synergism of ethanol and central-nervous-system depressant drugs. The importance of the microsomal oxidase system remains to be determined.

There is no compelling evidence that ADH is not the major enzyme responsible for the initial degradation of ethanol to acetaldehyde. However, several new factors have been clarified. For example, the rate-limiting step in ethanol metabolism was believed to be dependent upon hepatic ADH activity. The linear rate of oxidation of ethanol in man was related to saturation of liver ADH, and blood ethanol levels decrease in a linear fashion when blood alcohol values exceed concentrations of 20 mg. per 100 ml. However, explanation of the zero-order kinetics of ethanol metabolism on the basis of saturation of hepatic ADH has been questioned. The Michaelis constant (K_m) for the interaction of ethanol with ADH is about 2×10^{-2}M. However, very high blood alcohol concentrations of 400 mg. per 100 ml. would be equivalent to 8×10^{-2}M, and moderate intoxication with blood ethanol levels of 100 mg. per 100 ml. would yield values equivalent to 2×10^{-2}M. It is apparent that ADH is only half saturated at moderate blood levels and not fully saturated at even very high blood alcohol levels. The availability of hepatic NAD may be a major factor in regulating the zero-order kinetics of ethanol oxidation, and ratios of NAD to reduced nicotinamide adenine dinucleotide (NADH) would be a crucial factor affecting the rate of ethanol metabolism. This hypothesis is consistent with studies that have shown that in vivo metabolism of ethanol is associated with a significant decrease in hepatic NAD-NADH ratios.

Metabolism of acetaldehyde—The second major step in the degradation of ethanol involves conversion of acetaldehyde to acetylcoenzyme A. This reaction is catalyzed by aldehyde dehydrogenase and requires NAD as a cofactor. The rate of acetaldehyde metabolism is very rapid and exceeds the rate of oxidation of ethanol to

acetaldehyde. Because of this rate-contingent factor, it would be predicted that very little acetaldehyde would be detected in blood after ingestion of ethanol. Despité the short half-life of acetaldehyde, it has been shown that unique effects induced by acetaldehyde cannot be produced by ethanol alone. For example, acetaldehyde has been shown to inhibit coenzyme A activity and pyruvate-stimulated oxidative phosphorylation in brain mitochondria. Acetaldehyde may affect biotransformations and metabolism of catechol and biogenic amines by stimulating the release of norepinephrine from neural storage depots and shifting the catabolism of norepinephrine and 5-hydroxytryptamine from oxidative to reductive pathways. The competitive inhibition by acetaldehyde of 5-hydroxyindole acetaldehyde oxidation to 5-hydroxyindole acetic acid is probably the major factor accounting for the increased formation of 5-hydroxytryptophol and methoxy-hydroxyphenyl glycol in animals and man after alcohol administration. Acetaldehyde may also condense with norepinephrine, epinephrine, or serotonin to produce an intermediate Schiff base, which undergoes spontaneous molecular reorganization to form tetrahydroisoquinolines or tetrahydropapaveraline. The molecular structure of these compounds is similar to plant alkaloids that have high addictive potency; thus, the addictive properties of ethanol may be related, in part, to the concentration of acetaldehyde generated during ethanol metabolism.

Acetaldehyde levels are relatively low after acute administration of ethanol. However, it has been suggested that chronic high-dosage ethanol intake might produce appreciably higher blood acetaldehyde levels. We have studied blood acetaldehyde levels in patients with chronic alcoholism, drinking spontaneously up to 32 ounces of bourbon or grain ethyl alcohol per day under research-ward conditions. Blood acetaldehyde was determined with a sensitive and specific gas chromatographic technic. When blood ethanol levels ranged between 45 and nearly 500 mg. per 100 ml., blood acetaldehyde levels averaged 0.13 to 0.15 mg. after bourbon consumption and 0.04 to 0.08 mg. per 100 ml. after grain-ethanol consumption. The mean consumption of bourbon was 649 ml. per day, a volume that contains approximately 34 mg. of acetaldehyde. This suggests that the higher levels of blood acetaldehyde in the bourbon drinkers originate, in part, from bourbon, whereas in the grain-ethanol group, acetaldehyde was derived from metabolic processes alone. These data indicate that no significant dose-response relations existed between blood ethanol levels and blood acetaldehyde levels, and blood acetaldehyde levels tended to be relatively low even with very high blood ethanol levels.

In a subject whose 50 percent grain-ethanol intake was programed at the rate of 2 ounces per hour, blood ethanol level rose to 360 mg. per 100 ml. within 8 hours. Blood acetaldehyde levels remained low and relatively constant as blood ethanol levels were ascending. When alcohol was withdrawn, blood ethanol levels fell from 335 mg. per 100 ml. to 0 in approximately 15 hours. During the descending phase, blood acetaldehyde values remained quite stable until the 14th and 15th hours, when blood alcohol levels decreased to low values. These data indicate that no dose or dose-time relations occurred between blood ethanol levels and blood acetaldehyde levels. It appears unlikely that high acetaldehyde levels accumu-

late in subjects who consume large quantities of beverage alcohol for long periods. Although small amounts of acetaldehyde may produce unique pharmacologic effects in the central nervous system or other organs, the pathophysiologic processes associated with high-dosage acetaldehyde administration to laboratory animals cannot be extrapolated to man. It is unlikely that acetaldehyde has an important role in the process of tolerance for alcohol. Tolerance has dose and dose-time relations to blood ethanol levels. Since such relations were not found for blood acetaldehyde levels, the major addictive agent in alcoholism is ethanol itself and not its initial metabolite.

Induced changes in ethanol metabolism—In laboratory animals increased rates of ethanol metabolism may follow chronic ethanol administration. This increase has been found to correlate with increased hepatic ADH activity by some investigators, but others have failed to find this relation.

Studies carried out by behavior geneticists have indicated that in inbred strains of mice, the animals showing the greatest preference for ethanol had the highest liver ADH activity. However, strain differences in hepatic ADH activity to correlate poorly with the rate of ethanol metabolism in the intact animal. Strain differences associated with preference for alcohol also correlate with other factors, such as sleeping time, which cannot be explained by differences in rate of metabolism of ethanol. These data suggest that differences in metabolic rate do not adequately explain differences in selection of, or tolerance for, ethanol in genetically homogeneous strains of mice.

In man, rates of ethanol metabolism may increase as a function of amount and duration of ethanol ingestion by alcoholics. This increased rate of alcohol metabolism observed in alcoholics after drinking may be related, in part, to the phenomenon of increased behavioral tolerance for alcohol.

The available data concerning the extent to which physical and chemical manipulations may affect the rate of ethanol metabolism are equivocal. There is a controversial literature concerning the effects of glucose, thyroid hormones, and insulin on ethanol metabolism. In general, there appears to be no predictable effect of any of these agents on ethanol metabolism or on modification of intoxication levels in man.

The rate of ethanol metabolism in man can be increased by administration of fructose. The mechanism whereby fructose enhances ethanol metabolism is unclear, but it has been postulated that intermediates of fructose metabolism affect dissociation kinetics of the ADH-NAD complex. Little clinical application has occurred for the use of fructose in the treatment of acute ethanol intoxication.

There are no specific pharmacologic agents other than fructose that appreciably enhance rates of ethanol metabolism with a concomitant reduction of acute intoxicating effects of alcohol. A variety of "sobering-up" processes have been described, but no efficacy for any of them has been demonstrated.

Suppression of ethanol metabolism has been achieved in animals by administration of pyrazole, an inhibitor of liver ADH. No clinical application of pyrazole has been attempted. The possibility that pyrazole has hepatotoxic effects limits its use.

Perhaps the most important factor affecting the rate of ethanol metabolism in man is dietary intake. There is a 50 percent reduction in the rate

of metabolism of fasted rats as contrasted to well-fed animals.

We have examined blood ethanol levels in alcoholics given fixed dosages of alcohol with progressive reduction of caloric intake from other dietary sources. No appreciable reduction in weight occurred, and there was no notable alteration in blood sugar levels. However, a progressive increase in blood alcohol levels occurred as caloric intake was reduced.

Alcoholics tend to eat poorly while they are drinking, and nutritional derangements are a common clinical phenomenon. It has been assumed that the alcoholic does not eat because of diminished appetite, which, in part, might be due to a caloric contribution from alcohol. But it is possible that malnutrition is more closely related to the alcoholic's efforts to manipulate the effect of alcohol by not eating. The alcoholic may learn that a greater behavioral response occurs after ingestion of a given dose of alcohol if food is not eaten before or concomitantly with his drink. If this is the case, a progressive reduction in food intake should parallel progressive development of tolerance in chronic alcoholism.

Alcohol metabolism in alcoholics and nonalcoholics—The rate of ethanol metabolism in alcoholics and nonalcoholics is not notably different. There are no important differences in the rate of metabolism in alcoholic and nonalcoholic subjects when both groups have been abstinent for a period of at least 3 weeks.

These data do not negate the observation that enhancement of ethanol metabolism may follow chronic ethanol ingestion by both alcoholics and nonalcoholics. Moreover, these data should not be interpreted as excluding the possibility that small amounts of unique intermediates exist for alcoholics and that these intermediates have serious pathologic or pharmacologic effects.

Some investigators continue to explore the possibility that differences in tolerance to ethanol have a metabolic or enzymatic basis.

At present, there are strong data to support the notion that tolerance for ethanol by the alcoholic is related to factors that regulate the metabolism of ethanol. Although enhanced rates of ethanol metabolism have been demonstrated to occur in man after prolonged drinking, this enhanced rate cannot explain the considerable degree of tolerance for alcohol shown by alcoholics who may have very high blood ethanol levels and continue to perform cognitive and perceptual motor tasks reasonably well.

Central-Nervous-System Cellular Adaptation

Cellular adaptation to ethanol appears to be a more parsimonious hypothesis to explain the phenomenon of tolerance.

Adaptation of cell systems to pharmacologic agents has been demonstrated in systems ranging from autonomous single cell units to complex organ function. At the single cell level, it is well known that microorganisms may become resistant to pharmacologic agents that may directly destroy the cell or impede its growth and division.

Knowledge of the mechanisms of adaptation of bacteria to noxious pharmacologic agents has not been paralleled by clarification of the adaptive processes that occur in the central nervous system after repeated administration of ethanol or other centrally acting drugs.

Tachyphylaxis, a form of tolerance, has long been known, but only recently has the mechanism of tolerance to repeated administration of

sympathomimetic amines been clarified. Tolerance to sympathomimetic amines is associated with depletion of norepinephrine and tachyphylaxis can be prevented by norepinephrine repletion. This model may have applicability to drug actions inducing depletion of endogenous transmitters, but there is no direct evidence that this phenomenon obtains in the development of tolerance to and dependence on alcohol. There is some indirect evidence that tolerance to ethanol may be associated with a decreased release of acetylcholine.

One major difficulty in exploring cellular adaptation in animals has been the lack of effect of ethanol on a number of measurable indexes when ethanol is administered in relatively physiologic concentrations. Suppression of neurochemical and neurophysiologic activities has been reported with extraordinarily large dosages of alcohol in vitro or semi-in-vivo systems. However, it has been difficult to ascertain an appreciable inhibition of any cellular function when concentrations of ethanol are employed that produce inebriation rather than death.

Data have been obtained suggesting that active ion transport in the nervous system and in other tissues may be suppressed by relatively low ethanol concentrations. The translation of these neurochemical and neurophysiologic data into a testable theory for behavioral tolerance presents a continuing challenge for the ingenuity of the neurobiologist.

Dependence

Dependence is the second major pharmacologic criterion of alcohol addiction. The critical determinants of the *onset* of withdrawal symptoms are unclear since either a relative decrease in blood alcohol levels or abrupt alcohol abstinence may precipitate this syndrome. Abstinence signs have been observed in subjects with blood alcohol levels as high as 100 mg. per 100 ml. Withdrawal onset does not appear to be related to the dosage or duration of a drinking period; we have observed partial withdrawal signs in subjects who have been drinking small amounts of alcohol for as little as 4 days.

Denervation Supersensitivity

Many withdrawal phenomena involve an exaggeration of behavior that is suppressed by the agent that induces dependence. For example, morphine ingestion in man is associated with myosis whereas mydriasis is frequently observed during the abstinence syndrome. In addition to the concept of rebound hyperexcitability, it is postulated that a latent hyperexcitability exists during the time the agent is ingested. In other words, the agent induces an increase in excitability of nervous pathways that are masked by the depressant action of the drug on the same pathways, or the drug induces depression through activation of suppressive pathways. The empirical relevance of these constructs to the alcohol abstinence syndrome remains to be demonstrated.

The concept of "denervation supersensitivity" was introduced to account for the decreased threshold in prolonged response of autonomic effector organs after destruction of preganglionic cells and postganglionic axons. The underlying mechanisms are unknown. One possible mechanism may be a failure of inactivation of adrenergic transmitters via tissue uptake processes. After denervation, the transmitter uptake mechanisms of autonomic nerve terminals may be partially or completely impaired, with resultant supersensitivity of the effec-

tor organ to injected chemical stimuli. It has been shown that supersensitivity can be induced by any process that blocks efferent impulses to effector sites. This would include preganglionic nerve destruction, pharmacologic blocking agents, and pharmacologic block of adrenergic transmission. However, presynaptic failure of inactivation may not account for denervation supersensitivity phenomena, and some postsynaptic sensitivity change must be assumed. None of these constructs has been tested with regard to dependence induced by ethanol ingestion in the alcoholic, but a number of models, principally peripheral structures, have been used for study of concomitants of denervation supersensitivity.

The phenomenon of "denervation supersensitivity" has been used as a model to explain central-nervous-system seizure activity in severe abstinence syndromes. It has been suggested that chronic central-nervous-system depression by barbiturates, morphine, alcohol, etc., is tantamount to "disuse." Upon removal of the drug, there is a consequent rebound hyperexcitability of the functional systems depressed. Therefore, drugs that elevate thresholds for chemically induced seizures would be expected to exhibit lowered seizure thresholds during withdrawal. The formulation of "disuse supersensitivity" is supported by the finding that barbiturate withdrawal in the addicted cat is associated with a decreased threshold for pentylenetetrazol-(PTZ)-induced seizures.

Surgical isolation of a cortical slab in the cat resulted in the gradual development of increased susceptibility to epiliptiform activity. It was postulated that barbiturate intoxication functionally deprived the cortex of neuronal input in a manner analogous to chronic denervation produced surgically. Consequently, a comparable increase in duration of epileptiform activity might result from stimulation of cortical slabs in barbiturate-dependent cats surgically isolated immediately before drug withdrawal. Although the mean *duration* of stimulation-induced afterdischarges was greater than that in nonaddicted controls, chronic isolation of cortical slabs produced a far greater change in duration of afterdischarge. Thresholds were not appreciably different between experimental and control groups.

These data on changes in cortical excitability were not strongly supportive of a "denervation supersensitivity" hypothesis. However, evidence adduced to support a "denervation supersensitivity" model of abstinence seizure activity was based on *threshold* changes. Although it is reasonable to assume a concordance between lowered threshold and duration of afterdischarge, these data should be interpreted with consideration of the fact that this was not explicitly demonstrated in barbiturate-addicted cats. Also, no comparisons between PTZ and electrically induced seizure thresholds were reported.

There is some evidence that midbrain structures may have a more important effect than cortical tissue on the action of ethanol in the central nervous system. But until the action of ethanol on specific sites in the central nervous system is clarified, a denervation supersensitivity model will be difficult to test.

Psychoendocrine Factors

Adrenal medullary and adrenergic mechanisms—Morphine addicts show an increased excretion of catecholamines and their metabolites during drug use. During withdrawal, there is a decrease in catecholamine excre-

tion in relation to the predrug baseline. One could postulate that the higher output of catecholamines during morphine administration was associated with an increased threshold at receptor sites and a more rapid rate of degradation or absorption of catecholamines at peripheral nerve endings. The reduced output of catecholamines may reflect a compensatory response to relatively low thresholds at adrenergic receptor sites. This notion would be consistent with a denervation supersensitivity model.

There is information that acute ethanol administration may increase urinary excretion of catecholamines and their metabolites in laboratory animals and man.

Several investigators have described alterations in catecholamine levels during alcohol withdrawal. It is difficult to evaluate the importance of these changes because of complicating variables. It is difficult to ascertain the contribution made by the presence and severity of intercurrent illness. It is impossible to determine if the changes were specifically related to alcohol withdrawal or to stress factors coincident with hospitalization. Finally, no baseline levels of catecholamines or their metabolites were obtained before the onset of the withdrawal syndrome. It is therefore difficult to judge the importance of any catecholamine response during withdrawal as differentiated from alterations in catecholamine metabolism during the drinking period that immediately preceded withdrawal.

A study of the effects of chronic ethanol ingestion on urinary excretion of catecholamines and their metabolites has been carried out in our laboratory. Two studies were carried out: one in which alcohol was administered in programed doses and a second in which alcoholics were permitted to consume ethanol on a free-choice basis. During programed intake, blood alcohol levels rose slowly to peak levels of between 100 and 150 mg. per 100 ml. An increased excretion of epinephrine, metanephrine, norepinephrine, and normetanephrine occurred with the rise in blood levels. When alcohol was progressively reduced in dosage, levels of catecholamines and their metabolites tended to fall toward baseline values. During the postalcohol phase of the programed study, the subjects did not have severe withdrawal signs and symptoms, and excretion of catecholamines and their metabolites returned to baseline levels or below.

When higher blood alcohol levels were achieved during free-choice alcohol consumption, catecholamine levels progressively increased through time, particularly for epinephrine excretion. When alcohol was withdrawn and severe withdrawal symptoms ensued, catecholamine levels, particularly those of epinephrine, tended to remain markedly elevated. Return of catecholamine levels to baseline values appeared to occur with remission of withdrawal symptoms.

These data support the increase in effector output predicted by the model proposed for relations between receptor thresholds and effector output during alcohol ingestion. However, during alcohol withdrawal, particularly when the abstinence syndrome was severe, effector output levels tended to remain high, or even higher than those observed during alcohol administration. Thus, a negative feedback system between receptors and effectors was not substantiated during the alcohol withdrawal phase.

Determination of vanillyl-mandelic acid (VMA), the major catecholamine catabolite excreted in the urine,

revealed a marked reduction when subjects were drinking. Concomitantly, methyoxy-hydroxyphenylglycol (MHPG) excretion was strikingly increased. These findings agree with the reports of investigators who have shown that acute alcohol ingestion shifts the catabolism of catecholamines in man from oxidative to reductive pathways. This alteration presumably occurs as a function of changes in NAD-NADH ratios in the liver produced by ethanol metabolism or competitive inhibition of aldehyde dehydrogenase or both.

The findings of this study concern only catecholamine metabolism in the whole body and not any specific body fraction or pool. Thus, these data do not necessarily provide information about catecholamine biosynthesis, utilization, and catabolism in the central nervous system.

Adrenal cortex—There are data indicating that ethanol produces an activation of adrenocortical function as well as adrenergic and adrenal medullary secretion. Administration of ethanol by intragastric tube to rats lowered adrenal cholesterol and ascorbic acid. These decreases did not occur in animals that were hypophysectomized—a finding indicating that ethanol stimulated a release of ACTH. Ethanol-induced changes in the adrenal cortex were specific for that organ.

More recent studies demonstrated that adrenocortical stimulation did not occur after administration of small doses of alcohol to the rat via gastric tube, but marked stimulation of adrenocortical stimulation activity occurred after intraperitoneal injection of ethanol. The size of dose and mode of administration were the crucial factors determining adrenal responsivity to alcohol.

A comprehensive assessment of changes in corticosterone levels after ethanol administration intraperitoneally to rats has been carried out. Plasma steroid levels increased in parallel relation to doses of alcohol ranging from 0.5 to 4.0 g. per kilogram of body weight. No elevation of plasma corticosterone occurred when ethanol was administered to hypophysectomized animals. Intraperitoneal injection of a local anesthetic before ethanol administration failed to alter the action of ethanol on plasma corticosterone levels. Moreover, repeated daily injections of ethanol for as long as 1 week did not result in a pituitary-adrenal adaptation. These data suggest that ethanol induced an increased output of corticosterone or, less probably, suppressed degradation of adrenal steroids.

Most data obtained in man have been limited to observations after acute or short-term ethanol administration.

We examined serum cortisol levels in four alcoholic and four nonalcoholic subjects before, during, and after a 4-day period of experimentally induced intoxication. Alcoholics showed significant increases in serum cortisol levels while they were drinking and marked elevations in cortisol values during the early withdrawal period. Nonalcoholics showed rises in serum cortisol levels when gastrointestinal symptoms developed while they were drinking. No nonalcoholic subjects had withdrawal symptoms, and their serum cortisol levels were normal during the withdrawal period.

More recently we studied serum cortisol levels in alcoholic subjects during *long-term* drinking episodes. These studies were carried out under research conditions in which alcoholics were given programed doses of alcohol in the form of an 86-proof bourbon every 4 hours, day and night.

Serum cortisol levels tended to rise

slightly during the baseline period as the drinking period approached. An appreciable increase in serum cortisol levels was observed when drinking started and rough parallelism occurred between blood alcohol level, degree of inebriation, and increasing serum cortisol values. The serum cortisol values were highest when subjects reported gastrointestinal symptoms. Serum cortisol levels fell to prealcohol levels during the withdrawal phase.

The mechanisms by which ethanol induces elevated cortisol levels in alcoholics remains to be explored. Several possibilities may be mentioned. Ethanol may induce an enhanced secretion of corticotropin via activation of neural-pituitary circuits. No direct measurements of ATCH have been carried out after ethanol administration to man or animals. But it is likely that ethanol stimulation of adrenocortical activity in man involves neural-pituitary mechanisms.

Another factor is a possible impairment in the catabolism of cortisol. The major site for catabolism of cortisol is the liver. Assessment of hepatic function gave no evidence of acute or chronic liver disease. However, these tests only assess hepatic reserve and absence of acute pathophysiologic processes. Therefore, it is possible for cortisol catabolism to be impaired even though other aspects of hepatic function appear normal.

Decreased excretion of cortisol metabolites could affect serum cortisol levels, but this is unlikely since there is no evidence that conjugation of tetrahydro derivatives of cortisol is inhibited by ethanol or that ethanol has a specific inhibitory action on crucial enzymes affecting conjugation.

Our data indicate that the highest serum cortisol values were observed when gastrointestinal symptoms developed during drinking and when these symptoms were associated with decreased food intake. The effects of fasting on adrenocortical activity reveal little or no effect of food deprivation on the secretion or metabolism of cortisol in man. It is also unlikely that the physical discomfort associated with gastrointestinal symptoms induces an increased degree of adrenocortical secretion. But the emotional importance of these phenomena may be an effective stressor. For example, if the alcoholic perceives gastrointestinal disturbances as the heralding symptom that may prevent him from drinking in the near future, this may be an aversive emotional stimulus.

Perhaps a more parsimonious interpretation concerns the effects of food intake on ethanol metabolism. Decreased food intake or starving results in a lower rate in the metabolism of ethanol. Since good dose-response relations appear to occur between blood ethanol levels and serum cortisol values, the sequential effects of decreased food intake on adrenocortical function in alcoholics when they are drinking may be as follows: gastrointestinal symptoms result in decreased food intake; decreased food intake causes a lower rate of ethanol metabolism, probably via decreased regeneration of NAD from NADH in hepatic tissue; and increased blood alcohol levels progressively stimulate increased cortisol secretion from the adrenal cortex via neural-pituitary activation.

It is more difficult to differentiate the direct effects of ethanol on neural and pituitary mechanisms from the derivative peripheral adrenal effects that may occur as a concomitant of chronic drinking. Contrary to popular belief, chronic ethanol intake by the alcoholic is associated with a progressive dysphoric state. The finding that

alcoholics become more anxious during drinking, and concomitantly show elevations in serum cortisol levels, supports the notion of the role of alcohol in inducing or exacerbating emotional stress reactions during chronic alcohol ingestion, and often alcohol withdrawal.

It is also possible that increased adrenocortical activity associated with chronic drinking is important in modifying the physiologic processes that determine metabolic tolerance for ethanol. The role of the glucocorticoids in affecting carbohydrate metabolism is well known, and the role of carbohydrate metabolism through its effects on hepatic NAD-NADH ratios in the regulation of ethanol metabolism may be of primary rate-limiting importance. Glucocorticoids may modify the activity of a number of enzymes involved in the metabolism of a variety of endogenous and exogenous substrates. Although there is no direct evidence that cortisol affects the activity of hepatic ADH or aldehyde dehydrogenase, it is possible that enhanced activities of these enzymes could be mediated by an increase in circulating levels of cortisol.

There is also evidence that adrenocortical hormones may be important in the degree of adaptation or central-nervous-system tolerance for ethanol. Animals that appear to have the greatest tolerance for ethanol showed the highest plasma corticosterone response after ethanol administration. These data suggest that the effects of ethanol on animal behavior may be related in large part to the responsiveness of the pituitary-adrenal axis to ethanol.

In addition, there is increasing evidence that alcohol affects adrenal mineralocorticoid activity. Ethanol might have a specific effect on tubular reabsorption of sodium in the kidney. Aldosterone might be involved in ethanol-induced changes in sodium metabolism. The exact mechanism of this response has not been elucidated. Preliminary data indicate that the renin-angiotensin and pituitary-adrenal control mechanisms are required for the low-dose aldosterone response to ethanol. On the other hand, the high-dose inhibition of ethanol on aldosterone secretion appears to be related to some unspecified hemodynamic mechanism.

We have recently carried out a study of aldosterone secretion in alcoholic subjects during free-choice ethanol ingestion. During the baseline period, aldosterone excretion was within the normal range. On the first day of ethanol intake, blood alcohol levels averaged 100 mg. per 100 ml. and blood aldosterone excretion increased markedly. During the 1st 3 days of drinking, when blood ethanol levels ranged between 100 and 140 mg. per 100 ml., urinary aldosterone excretion increased to over 30 μg. per day by the third day of drinking. Blood ethanol levels continued to rise, but urinary aldosterone levels fell to normal ranges. However, when blood ethanol levels decreased from a high of over 300 mg. per 100 ml. on the 4th day of drinking to approximately 200 mg. per 100 ml. on the 15th day of drinking, urinary excretion of aldosterone again increased to high levels. Upon cessation of drinking, aldosterone levels fell to normal ranges. A variety of studies will have to be undertaken to ascertain if ethanol-induced changes in aldosterone excretion are related to mechanisms that control aldosterone secretion per se or to factors that affect the biosynthesis of aldosterone. The aldosterone findings in animals and man suggest that ethanol may be affecting mineralocorticoid activity in a profound manner.

Identification of Unitary Mechanisms of Tolerance and Physical Dependence

Relevance of Studies with Drugs Other than Ethanol

Tolerance and physical dependence have been discussed as separate entities although both are essential criteria for defining alcohol addiction. Do tolerance and physical dependence represent phenomena subserved by a common mechanism, or do different biochemical processes and physiologic events underlie the expression of each? Certain centrally acting drugs may induce tolerance but not produce physical dependence. For example, the amphetamines appear to induce no clear-cut physical dependence in man, and yet tolerance is not uncommon. On the other hand, the denervation supersensitivity theory postulates that a common mechanism underlies tolerance and physical dependence. There is evidence that a common underlying mechanism may be involved in the development of tolerance and physical dependence for morphine.

Animal Models

The application of these findings to tolerance for and physical dependence on alcohol remains to be determined. However, a satisfactory animal model that meets the criteria of tolerance and physical dependence must be developed. Several recent investigations appear to hold some promise for the accomplishment of this need.

Biochemical and Molecular Models

If an animal model is successfully developed, a variety of technics can be applied to exploration of the neurochemical and neurophysiologic processes that may be related to addiction. There appear to be two approaches that stem from theories of the biochemical nature of tolerance and physical dependence.

An enzyme expansion theory of drug tolerance and physical dependency conceives of tolerance and physical dependence as a unitary mechanism based upon processes of repression of enzyme synthesis.

Another theory is based on the hypothesis that drugs with addictive potency induce an increase in receptor sites for the drug in the central nervous system and other tissues. This theory proposes that active receptor sites exist in cells that bind with the drug. When the drug is administered in increasing dosage, additional receptor sites develop because the original receptor sites are bound. Thus, through time, more and more receptor sites are drug induced. As more receptor sites develop, more drug is necessary to interact with these receptor sites; hence, tolerance develops through time. When the drug is removed, an enhanced number of receptor sites are active, and, hence, excitation and the withdrawal syndrome occur. The properties of the receptor sites and the endogenous substances that ordinarily interact with these receptors are not specified drugs. However, among candidates for the endogenous substances are 5-hydroxytryptamine, acetylcholine, and central catecholamines.

The theories assume the existence of a number of undetermined or unspecified entities. Consideration of a simple unitary model for both tolerance and physical dependence is most complicated when a number of factors concerning alcohol metabolism, tolerance, and the nature of the abstinence syndrome are taken in account.

The withdrawal syndrome provides the least equivocal evidence that a process of addiction to alcohol has occurred. Yet the withdrawal syndrome is extraordinarily complex. The

alcohol withdrawal syndrome is not an all-or-none state, for partial withdrawal has frequently been observed with relatively small decrements in blood alcohol levels. Moreover, certain components of the withdrawal syndrome are initiated by a series of events that do not conform to any model or theory of addiction so far proposed. For example, it has been observed that the alcohol withdrawal states may be associated with a transient hypomagnesemia. Hypomagnesemia during alcohol withdrawal appears to be associated, in part, with respiratory alkalosis, which, in turn, is induced by hyperventilation, which occurs after cessation of drinking.

Most conceptualizations of physical dependence have been limited to considerations of processes that occur when the drug is present in the organism or the initial consequences of drug withdrawal. There is increasing information indicating that the abstinence phenomenon may have a protracted time course and that some form of "memory trace" may be associated with physical dependence. For example, a number of signs observed in acute withdrawal states with morphine-dependent humans and animals may persist for many months. Rhesus monkeys addicted to morphine gave evidence of nalorphine sensitivity for as long as 3 months following withdrawal from morphine. These data suggest that when physical dependence has been established, long-term changes ensue in the central nervous system that may influence the development of subsequent episodes of dependence. It remains to be determined whether these findings with narcotic analgesics can be extended to alcohol addiction. Current information indicates that both tolerance to and physical dependence on alcohol have multiple determinants that involve a complex interaction of neural, endocrine, and metabolic factors.

Alcohol addiction is characterized by processes of tolerance and physical dependence, the mechanisms of which are poorly understood. There is no compelling evidence that tolerance is associated with inherent or adaptive changes in ethanol metabolism in alcoholics. Physical dependence and tolerance are probably due to modifications in central-nervous-system function that, in turn, are affected by peripheral endocrine and metabolic concomitants of chronic ethanol intake. Elucidation of this process requires an animal model that fulfills the physiologic and behavioral criteria of addiction to alcohol. Although social and cultural factors contribute to the genesis and natural history of alcoholism, successful intervention for the primary disorder and associated illnesses appears to require a better understanding of the biologic factors that underlie the addictive state.

Note: This two-part article has an extensive list of references on the biochemistry of alcoholism.

Impairment of Shock Avoidance Learning After Long-Term Alcohol Ingestion in Mice

GERHARD FREUND

Brain damage in chronic alcoholism is generally attributed to malnutrition, particularly thiamine deficiency. The purpose of this study is to investigate whether chronic ingestion of ethanol with a nutritionally adequate diet impairs performance in a shock-avoidance task.

Forty-two 8-week-old female mice were divided into three equal groups. One group received laboratory chow and water ad libitum, the others were pair-fed with liquid diets containing ethanol or sucrose as 35 percent of total calories. Two additional groups of eight mice were pair-fed with the alcohol- and sucrose-containing diets for 3 months.

After 3 months the diet of all groups was changed to laboratory chow, and the degree of severity of withdrawal reaction was determined. The mice were then maintained on chow and water for 10 to 14 days before they were tested in a shuttle box. A sound and a light were presented simultaneously for 5 seconds. The unconditioned stimulus was a 0.3-ma scrambled shock delivered to the cage floor for 5 seconds or until the mouse escaped to the other side.

An avoidance response was recorded when the animals moved to the other side of the shuttle box during the 5-seconds preceding shock. After training for 16 days, passive avoidance training was begun 1 minute after the last active avoidance session by applying current to the opposite side of the shuttle box floor. The mice previously trained to avoid shock now had to remain in the original compartment upon presentation of the conditioned stimuli in order to avoid shock.

The mean body weights of the mice at the beginning of behavioral testing were 22.4 grams for the group consuming water, 23.6 grams for the group consuming sucrose, and 23.3 grams for the alcohol group. The maximum weight loss of the ethanol-consuming mice was 1.2 grams on day 8, but the majority of this group lost no weight. The mean daily alcohol consumption calculated as absolute ethanol was 0.58 ml. Upon substitution of chow for the liquid diet a withdrawal reaction was observed in all mice that received alcohol in the diet: nine had nonlethal convulsions, and five developed tremors and forward arching of the tail.

The rate of learning of ethanol-consuming mice after discontinuation of the alcohol diet was slower than that of mice on sucrose and chow diets. The performance of the chow and sucrose groups was indistinguishable. The rate of learning became asymptotic at a mean of 56 percent correct responses on day 11 for the ethanol-consuming mice after discontinuation of alcohol diet as compared with an asymptotic rate of 81 percent for the controls. The performance of the sucrose- and ethanol-consuming groups (after discontinuation of alcohol diet) continued to be asymptotic to day 16. No "freezing responses" were observed.

This demonstration of a direct effect of ethanol or its metabolites upon brain function may imply that not all toxic effects of chronic ethanol consumption upon the brain can be prevented by the administration of vitamins.

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The Role of the General Practitioner in Support of an Alcoholic Rehabilitation Hostel

B. Pollak

The number of offences for drunkenness in England and Wales increased from 75,544 in 1967 to 79,070 in 1968. The 1967 Criminal Justice Act shows a more enlightened policy toward "skid row," and a Home Office Working Party is examining alternatives for the drunken offender. Instead of repeated and ineffective punishment, it is hoped that the offender will be offered rehabilitation. Specialized hostels can provide a milieu in which the recividist alcoholic can cure himself of his addiction and social isolation. Rathcoole is an experimental hostel which has tried to achieve these aims since 1966.

This study covers 36 months during which 83 residents underwent full medical examinations by a general practitioner. The background of the men revealed the typical features of the skid row alcoholic. Their alcohol abuse showed a mean length of 25 years, and 50 percent admitted to recurrent consumption of crude alcohol. Sixty-five percent had had no family ties during the past 5 years, none had been in regular employment during the past 2 years, and 10 percent had attempted suicide. Street accidents while under the influence of drink were common, and 16 percent had serious disabilities from accidents or brawls. The average age was 45. All had the "shakes." Morning sickness, restlessness, lack of concentration, and insomnia were the most common complaints. The two most important findings were that 11 percent had undergone a partial gastrectomy, or similar operation, and that 5 percent had a past history of pulmonary tuberculosis.

All of the men were in regular employment within 2 weeks of their arrival at the Hostel. Most of the men continued to enjoy good health during their stay, but two succumbed to carcinomata of bladder and three attempted suicide. Their attendance at the family doctor was no higher than the practice average for this age group.

Are skid row alcoholics mentally and physically fit enough to live in a Hostel of this type? The Rathcoole experiment shows that they are.

Can their rehabilitation take place in this type of alcoholic hostel? The experience at Rathcoole suggests that it can. It is of interest that 60 percent of the men had been in various hospitals but had returned to drinking immediately after discharge. The skid row alcoholic appears to be resistant to hospitalization, fearing that the psychiatrist can confine him to a mental ward.

Who should be responsible for the day-to-day medical care of such a hostel? The patients of Rathcoole were all registered with a family doctor, and apart from special investigations, they stayed under his care. A family doctor is ideally placed to give the vagrant alcoholic primary and continuing medical care, especially if psychiatric help is available. The fact that the skid row alcoholic becomes part of a normal practice ties him to the practice, and, through it, to the local community. It also allows the doctor to develop a relaxed, personal relationship with the alcoholic.

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Implications for Alcoholism Programming From Social Psychiatry and Social Medicine

JOSEPH ADLESTEIN

Many authorities in the fields of medicine, public health, and alcoholism have established the concept that alcoholism is an illness. This concept is changing attitudes toward alcoholism and the alcoholic. However, the concept becomes difficult to understand and apply when limited to the clinical medical model of a disease, a model associated in most peoples' minds with a specific germ etiology or with a metabolic or hereditary disorder of some kind. The model suggests there is a specific cause for an illness with specific symptomatology, and that the disease is responsive to a specific treatment, along with the belief that prevention can spring from control of this specific cause.

Thinking of alcoholism as an illness within the confines of this model creates problems in reconciling what we know of the complexities of this disorder with the implications of this model.

Modern medicine offers many different approaches to the study of man. Research medicine has high priority these days. Preventive medicine we know about from vaccinations, immunizations, and shots for this and that. Clinical medicine is one with which we also have first-hand knowledge. Social medicine, on the other hand, is a concept somewhat strange to most people and without a clear, concise definition. Its goals are concerned with protecting the individual in the community against forces that may interfere with man's fullest potential development and functioning, both mental and physical. The focus is on man as a dynamic part of his social and physical environment, interacting with it through time, being affected by it as well as affecting it. We can only understand man by understanding this total interacting system.

How is this concerned with alcoholism and the problems of alcohol? If alcoholism is an illness (and I believe it is), looking at it from the gestalt of clinical medicine alone may hinder, confuse, and becloud understanding, while looking at it from the perspective of social medicine and social psychiatry helps us understand what we are dealing with and how to develop approaches to its management. From whatever prospective you approach this problem, insights from these fields may be applied to the problems of alcohol and alcoholism whether you are a clinician, policeman, or administrator.

Working with many groups in the field of alcoholism, I have noted two goals which receive priority. The first goal is a society in which alcohol is not abused or used excessively, and the second is a society that provides compassion, understanding, care, and support for those who are victims of the excessive use or abuse of alcohol.

Let us examine the approaches we might take in developing a society in which alcohol use is not abused.

We could ban the use of alcohol. We tried this with prohibition and it didn't work because it cost society so much in other areas. Here is an important lesson—that the reverberation on every other aspect of living must be taken into account.

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Another approach would be to change alcohol so that its pleasure-giving properties remain, while its dangerous effects are diluted. To my knowledge, this has not been tried and the suggestion is usually discounted. The suggestion is not dismissed on scientific grounds, leaving one with the feeling that the myth that alcohol is a magical fluid is deeply held, and that this fluid must not be tampered with.

Another approach is to find the reasons for excessive drinking and do something about it. A host of material exists, detailing why some people drink too much. But moving from there to preventive programs becomes difficult if we limit ourselves to working with individuals. We usually try through massive educational programs to inform large numbers about alcoholism. This probably accomplishes little in the way of prevention. Clinical studies and socio-psychoanthropological studies of various cultures have taught us about the social forces that lead to the emotional problems that make many personalities vulnerable to alcohol. We know much about the social customs that support drinking patterns conducive to alcohol problems, or conversely that support drinking patterns which preclude the development of alcoholism, even though the same emotional problems are present. From a social medicine point of view, there are clues that suggest things which could change society to protect its individual members against forces conducive to alcoholism.

There is much we could do to alter our society's drinking patterns to ones less conducive to alcoholism. Perhaps this is where our efforts should be directed—toward changing a social custom, rather than warning people of alcohol's dangers and hoping they avoid it. Although more difficult, much might also be done about the negative social forces affecting individuals in today's society that help create the emotional problems that seem to be associated with excessive drinking and its related problems. It is imperative that we address ourselves to these problems as they not only seem to be related to alcoholism but to many other behavioral disorders of modern society.

Theories abound to explain the nature of alcoholism, but there is agreement that a circular relationship exists between alcoholism and social organization. The question may be raised as to whether or not some forms can be altered in response to the evidence that these arrangements foster the development of such disorders as alcoholism, mental illness, criminal psychopathy, sexual deviation, or the chronic disability associated with a variety of disorders. Is it not reasonable to expect that certain roles and institutions can be identified as foci of strain and accordingly altered by, if you will, human and social engineering? The Social Security Act and the battle on civil rights are examples of altering basic institutions and roles in our society with far-reaching impact on the mental health of significant segments of the population—although the primary intent in neither is mental health.

Our second goal is a society that offers compassion, understanding, care, and support for victims of alcohol. Here again we must be concerned with more than clinical approaches.

There are three areas with important implications for the development of treatment and support programs. These areas deal principally with:

1. The nature of alcoholism as a disorder and some of its specifics.

2. General trends in the development of health services in our society today.

3. A question of society's priorities.

What are some of the specifics to bear in mind in developing treatment programs?

The wide spectrum of individuals suffering from the disorder—Alcoholism affects all sectors of the population—rich, poor, educated, uneducated, young, old, male, female, etc. There is a body of knowledge about the underlying psychodynamics of alcoholism, but here too the picture can be confusing if one assumes that a certain type of person becames an alcoholic. Yet, among all the confusion, there are commonalities that can be helpful.

What are these areas of commonality? In general, alcoholic patients appear to be: suffering from feelings of estrangement and isolation; depressed, with feelings of hopelessness, sadness and futility; dependent upon external agents for security and care; hostile, with patterns of adaptation marked by a sometimes overwhelming amount of chronic rage suffusing the entire personality; sexually immature in the sense of having problems with sexual identification.

Beyond these generalizations, one cannot arrive at a specific profile of an alcoholic. Obviously, treatment approaches must be many and varied when the people to be treated show such a variety of personality problems and personality configurations.

The multiple causation of the disorder—To search for a single cause of alcoholism is fruitless. Evidence indicates that alcoholism is rooted in a combination of psychosocial-biological causes, especially when the drinking takes on the pattern of an addictive process. One could say that many alcoholics for many different reasons have failed to develop mechanisms other than the use of alcohol for handling psychological pain and that they apparently learn through experience that alcohol relieves the pain of tension and anxiety as nothing else would. This implicates cultural factors, since the development of alcoholism seems to depend on a culture that permits and supports the use of alcohol as a pain-relieving mechanism. This, in turn, leads to a consideration of the biological factors contributing to any addictive process upon which the psychological and cultural factors are superimposed and with which they interact.

The progressive nature of the disorder—Alcoholism is not an all-or-none disorder, nor is it easily recognizable in its early stages. While it usually takes many years to move through its various stages, it is progressive and leads to social deterioration and death unless intervention occurs. The estimated 5 or 6 million alcoholics in this country include all those at every stage in the total progression of the illness. Only a few are at the terminal stage; most are at the early levels and their needs can be met within the existing network of health and welfare facilities, provided certain changes take place within that network. This does not negate the need for additional specialized facilities to assist in rehabilitating significant numbers further along in this disorder.

The need for comprehensiveness and continuity of care—The success of treatment programs depends more on continuity of care and comprehensive community programs than probably any other disorder. The alcoholic's problems are multifaceted, requiring several avenues of help at the same time. The services and facilities he needs must constantly change as he progresses through one phase of treatment and rehabilitation to another.

Barriers to treatment—There is

nothing different or unique in the treatment of alcoholism from those techniques and modalities generally applied to other illnesses. Detoxification is essentially no different than detoxification from any drug. The treatment of cirrhosis and neurological conditions are the same as in treating cirrhosis or nutritional deficiencies from other causes. Psychotherapy, rehabilitation, counseling, and casework are the same. The main requisite is to accept the alcoholic as a patient or client, to overcome our prejudices, and to be willing to accept the difficulties in working with alcoholics as inherent in the disorder.

Although most alcoholics can be treated within the existing network of health and welfare services, they do not have access to these treatment resources. Some of the reasons are:

1. Community attitudes that result in the rejection of alcoholics. Since professionals are part of a community and reflect the attitudes in the community, they have contributed to this rejection.

2. Characteristics of the alcoholic. Although every alcoholic is unique, generalizations can be made about their behavior during treatment, behavior that almost guarantees their rejection by the helping person unless he is knowledgeable enough and secure enough to recognize and accept it as symptomatic of the disorder. This has implications for the kind of training given the people who come into contact with alcoholics.

3. The needs and personality makeup of the helping person. Many factors within ourselves may interfere with our effectiveness, besides ignorance, moral compunctions, prejudices, etc. These factors are as important as knowledge about alcoholism.

4. Related to the other three and a formidable barrier to making treatment available to the alcoholic is the concept of sickness held by lay and professional groups. Apparently just saying that this is a disease or a public health problem does not make it so in the eyes of the public or the professionals who are expected to respond as they do to other illnesses.

Many factors account for this failure. They represent real resistances which must be understood and worked through. It is likely that these behavior patterns involve vast sociocultural forces and mechanisms of unconscious and partly conscious motivation. The practice of medicine exists in a matrix of economic, political, social, and cultural elements, and its philosophy and practices are determined by the cultural conditions of its locality and time. Contrary to what most of us would like to believe, professionals are less often leaders setting the community pace than they are followers proceeding in the direction and at the speed which the culture determines.

Many obstacles besides moralistic judgments and distaste and distrust for drunken behavior impede treatment of the alcoholic. Foremost is the concept of sickness and its role in society today. The mere intellectualization that alcoholism is an illness or that the alcoholic is a sick person in no way guarantees that a helping person will respond appropriately. Despite their intellectual acceptance, a considerable segment of the lay and professional public continues to respond on the basis of the cultural relativist conception, and the alcoholic's behavior does not fit into that pattern of criteria socially defined as appropriate to the sick role.

Popular attitudes not only define what sickness is or is not, but also determine self-definitions of sickness—that is, whether or not the alcoholic

sees himself as a sick person.

Many aspects of alcoholism seem at variance with socially defined criteria of sickness. The alcoholic is held responsible for his troubles, for having brought them upon himself, although sickness in general is thought of as being visited upon one. The alcoholic is often seen as being demanding and ungrateful in his relationship with the helping person, in contrast to the gratitude customarily expressed by a sick person. The alcoholic seems uncooperative, resentful, and hostile, in contrast to the pliant obedience and desire to please of the sick person. The alcoholic tries the patience of the helping person and appears to try to disrupt their relationship, in contrast to the sick person's anxiety that such a disruption may occur. The alcoholic's behavior has a disruptive impact on those closest to him and on the community; the sick person's behavior invokes the sympathy and support of the community and those closest to him. The same behavior that is condemned in an alcoholic is, of course, accepted as a sign of illness in a psychotic person, but the alcoholic is not a psychotic and is not considered one.

Factors and trends other than those related to alcoholism are reshaping our roles in the health field and must be considered in developing successful treatment programs. Among these trends are:

1. The belief of the American people that access to care is a basic human right and not a privilege limited to those who can afford it, with increasing stress on one standard of care.

2. A growing belief in the fundamental dignity of human beings and the insistence on civil liberties—on voluntary participation in health care, especially mental health—and a resistance to involuntary procedures.

3. An increasing consumer determination to participate in planning to meet their needs—a refusal to rely solely on professionals.

4. A demand for service to the disadvantaged and other groups not formerly served—not only minority groups but the aged, children, alcoholics, addicts, etc.

5. The recognition that we in the health and welfare services must set priorities and set them clearly. We can no longer just ask for money to "do good."

6. Increasing pressure for public accountability for programs—not only fiscal accountability but proving responsiveness to community needs.

7. The dictum that no matter how services are provided, the Government is responsible for insuring that care is made available for all.

8. Pressure to reduce fragmentation and integrate services—mental health with other health, welfare, and rehabilitation services.

I would like to return to the theme of using social medicine and social psychiatric concepts as a frame of reference for thinking about the problems of alcoholism. Social medicine and social psychiatry are not only concerned with the impact of society or culture upon the development of illness in man but with the impact of the illness and its management upon society. I would like to suggest some things that should concern us:

Suppose we could control excessive drinking through an attack on the drinking problem per se. What would happen? The problems of alcohol would disappear. But what takes place in the totality of a society when this vehicle for tranquilization, for escape, for release of pent-up aggression and hostility, is removed without either

attacking the juxtaposition of forces responsible for excessive drinking or without providing an adequate substitute? Would we see an increase in mental illness; an increase in automobile accidents, as driving becomes one of the last ways left to act out pent-up hostility and aggression; a decrease in cirrhosis of the liver but an increase in ulcers, hypertension, and coronary disease as emotions become even more bottled up and inverted upon the self; an increase in suicides as less destructive opportunities for escape from situations felt to be intolerable are cut off? As an alcohologist I would say that we had succeeded marvelously; as a public health physician I would say that we had failed miserably.

I have no idea how valid or invalid these statements may be—nor, I am sure, has anyone else. Do not misunderstand me; even if they were completely valid, I do not feel that this should slow down our attempts to conquer the problems of alcohol or alcoholism. The fact that we save people from infectious diseases, only to have them die of chronic diseases, should in no way diminish our efforts. However, this does point up that such statements as "our society needs alcohol, or alcoholics, or alcoholism" or "the elimination of alcoholism may cause more serious problems in our society" are not nearly so nonsensical as they may seem. Indeed, they are important questions for anyone interested in the ecology of health and disease.

The problems of alcohol and alcoholism can be adequately considered only within the framework of these broader issues. Not to do so is apt to give us only a series of distorted perceptions of the immediate issues with which we are trying to come to grips.

Alcoholism Curricula: How Professionals are Trained

Stanley Einstein and Edward Wolfson

Of the several reasons for doing this study, the major one was to learn whether the person who has medical, psychiatric, social, and legal problems because of alcoholism is having his needs met by trained professionals. A one-page questionnaire was sent to 601 professional schools of training in the U. S. which were accredited by their own professional organizations. The disciplines included medicine, pharmacy, social work, psychology, nursing, and law.

Extent of Teaching about Alcoholism

Fifty-five percent answered, and 307 (95 percent) of those responding indicated that alcoholism was part of their curriculum. More than half of the medical schools responded. All of them teach something about alcoholism, but in only a few is it taught to the undergraduate medical student. A similar pattern is found in social work and law. Although schools of psychology and pharmacy are more likely to teach about alcoholism in their graduate programs, they begin a substantial amount of their teaching in their undergraduate programs. Nursing is the one discipline in which alcoholism is taught early in the professional career.

Time Allotted for Teaching Alcoholism

More than one class period was spent in teaching about alcoholism by 76 percent of the responding schools. Although the majority spent more than one class period on alcoholism, there were differences among the disciplines, ranging from 59 percent to 92 percent for more that one class period. In only one profession—medicine—never less than one class period was spent teaching about alcoholism. For law students a good part of what they are taught is covered in one session or less. For nurses, more than 80 percent of schools spend more than one class period on alcoholism.

Teaching Techniques

The predominant teaching technique is a combination of assigned readings and lecture-seminars. The next most common combines actual cases with reading and lecture-seminars. One-third of the responding schools reported using teaching techniques that fit into three categories: actual contact with problem drinkers, field trips, and the use of other specific teaching modalities. Clinical work with patients was part of the training for medical students, nurses, and psychology students. This includes actual treatment of patients, as well as consultation with agencies responsible for problem drinkers. Law and pharmacy students had no such direct patient experience. Field trips to appropriate institutions and rehabilitation centers, as well as to Alcoholics Anonymous groups, were an insignificant part of the overall training. These techniques were used only by schools of medicine and nursing.

Only 4 percent of the respondents use films. For nursing students, films were a relatively important part of their training. It is difficult to know whether the schools are unaware of the many films that are available on alcoholism, or whether they are unimpressed with the films.

The use of research as a learning

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experience is minimal. Even when term papers, theses, and laboratory work are combined into a generic category of research, only 5 percent of the schools use this teaching technique. Medical schools do not use reseach as a teaching technique and graduate schools of psychology seem not to feel that there is merit in having students write dissertations on alcoholism. The group as a whole depends mostly on the use of indirect teaching methods, rather than permitting students to have direct experience, under supervision, with problem drinkers. The student appears to be protected from the problem drinker while he is acquiring his professional skills. But upon graduation he is expected somehow to be able responsibly to take care of the many complex problems that the alcoholic can manifest.

Facets of Alcoholism Taught

The perception of alcoholism by the lay and professional communities has undergone drastic changes. The notion that alcoholism is a sign of moral depravity, weak will, and other moralistic stigmas has given way to viewing alcoholism as a disease or a chronic condition. This new definition of alcoholism includes the acknowledgment that alcoholism is a multifaceted problem.

The respondents tend to verify this. Alcoholism is taught in terms of its sociological, mental health, and psychopathological factors, the medical, treatment, physiological, and pharmacological aspects, as well as the legal and law enforcement aspects. Alcoholism as a public health problem, its prevention, and the use of community resources are taught, although this is rare. Each group acknowledges the multifaceted nature of alcoholism, but they rarely prepare their students for the day-to-day responsibilities they will meet in their work with problem-drinking clients.

Medical students are most often trained in the psychiatric and sociological facets of this problem. The medical and pharmacological facets appear to be next in importance and the legal facets are least important. The student physician is being taught that alcoholism is a sociologically derived problem which manifests itself psychiatrically.

The medical and chemotherapeutic treatment of alcoholism is not seen as a priority teaching task in medical schools. It is not surprising that this training results in less than adequate diagnoses of alcoholism or in uncoordinated care for the problem drinker.

Pharmacy students are basically taught the pharmacology of the problem.

Law students are apparently trained pragmatically; being a lawyer means studying law and little else. When one considers that the trend toward civil commitment of the problem drinker, coupled with arrests for public drunkenness, necessitates action based on the sociology and psychology of the problem, as well as the medical and psychiatric needs of the client, it becomes obvious that the problem-drinker client is being represented by a less than adequately trained advocate.

Nursing students appear to be receiving the most comprehensive training for their responsibilities. More than 90 percent of the schools report they train their students in sociological, psychological, psychiatric, and medical facets of alcoholism. They are more likely to be trained in the medical facets of alcoholism than medical students are. The nurse is, after all, most often the professional who is left

with taking care of the inpatient problem drinker, and most often is the person deciding upon admission of the outpatient alcoholic, whether into an institution or into the doctor's private office.

Social work students are being trained to work almost exclusively with the problem drinker's psyche. More than 40 percent of the schools do not cover the medical facets of alcoholism and less than 20 percent deal with the pharmacology. One wonders how the case worker or group worker is prepared to assess and refer clients to appropriate resources, or what role the community organizer can play if he has less than an overview of the problem. Legal aspects of alcoholism appear to be a minimal part of the social worker's training. The impact of this must be evaluated against the fact that in many civil (and not so civil) commitments, the social worker is an integral part of the referral process.

Psychology students, even more than law students, are being trained pragmatically; they are being taught the psychology of alcoholism and little else. When one considers that they are called upon to test patients whose responses may be contaminated by the effects of alcohol, to treat patients who may have medical as well as psychological problems, to explain the patient's level of functioning to family and/or employer, and to make appropriate referrals, one might conclude that their training is inadequate.

As a group, the schools place major emphasis upon the sociological and psychological facets of alcoholism: the problem drinker is a psychological problem to the community. The professional is, in essence, being told to see to it that his patient does not become too much of a nuisance to the rest of us.

The Importance of Alcoholism in the Curriculum

Although 93 percent of the respondents noted that alcoholism was part of their curriculum, 17 percent felt that it is either unimportant or very unimportant. Schools of social work and nursing almost always rated alcoholism as having some degree of importance in their training; psychology students were as likely to be trained in schools that felt that alcoholism was an important area for training as in ones where it was felt to be an unimportant one; more than one-third of the law schools noted that alcoholism was not important as a teaching area; and over 20 percent of schools of pharmacy and over 10 percent of the medical schools felt that alcoholism was not important.

Information Resources

The respondents were asked to indicate which of four alcoholism information resources they mentioned to their students. More than a third did not reply.

Almost 50 percent of the schools utilized the National Council on Alcoholism, and one-third the *Quarterly Journal of Studies on Alcohol.* The North American Association of Alcoholism Programs was used by only 12 percent of the respondents. The *International Journal of the Addictions* was utilized by approximately one of every six schools. Eleven of the schools utilized none of these resources; an equal number did not know if these resources were being used.

The general picture is that alcoholism is taught in the majority of the responding schools most often on a graduate level, using more than one class period; these are most often devoted to lectures, seminars, case pres-

entations, and readings; the emphasis is on the socio-psychological aspects of the problem; the most often used information resources are those that feel alcoholism is a treatable disease, and the goal of treatment is abstinence.

Law students are taught about alcoholism in relation to "the right to treatment," "how criminal responsibility is affected by alcoholism," "intoxication as a ground for divorce, or change in custody," "family law," "criminal law," "professional responsibility," "scientific proof," "arrest, proof, search, and seizure in driving," and "insanity."

Social work students are often given field placements in alcoholism rehabilitation centers and are training in "case work" elements, "social welfare and policy" elements, "community organizations" elements, and problems related to "corrections."

For psychology students, alcoholism is either a special topic or a sign of psychopathology, although Boston University has conceived of a graduate program in which "two or three Ph.D. candidates participate each year in an interuniversity training program for research in alcoholism in the Boston area."

Pharmacy students are made aware of "the relation of alcohol consumption to drug therapy or drug abuse," are trained "so that they can function effectively in their role as pharmacists to provide good information to interested citizens and guide individuals to physicians and/or appropriate agencies," as well as to "be able to protect himself and his reputation and exert some control over drugs, especially when they are not under existing laws."

Medical students are also made aware of alcoholism. It is the responses of the medical schools which, for this survey, may provide the clue as to why the training does not generally culminate in any meaningful services for the problem drinker.

The questionnaire was sent to deans of medical schools; yet 76 percent of the responses came from the departments of psychiatry. Most problem drinkers, when hospitalized for alcoholism, end up on a psychiatric ward even though their prime problems may be medical. Outpatient treatment of problem drinkers most often is under the direction of psychiatrists, even though the prevalent problems may be best handled by casework procedures, vocational training or retraining, or by communicating a much needed sense of hope by a mental health worker, or other concerned and sensitive nonprofessionals.

Most schools noted that there is not enough time to get everything into their curriculum—the implication being that this was why alcoholism was not taught in any consistent way. But it is just as likely that alcoholism is taught the way it is because the lay and professional communities are ambivalent about what to do with the problem and the problem drinker. Since the consequences of alcoholism are so serious to the physical, psychological, social, and business health of the nation, each discipline might create blue-ribbon committees to study how best to integrate teaching about alcoholism in their training programs.

The Inebriate in the Emergency Room

ABRAHAM GELPERIN and EVE ARLIN GELPERIN

The Supreme Court decision (Powell vs. State of Texas, 88 Supreme Court 2145, June 1968) that negated lower court rulings to the effect that the inebriate is a community health responsibility was largely based on the lack of readiness by health professions and facilities to cope with the problem of alcoholism. This decision is both an indictment of the health professions and a warning to get on with programs of services rather than pious pronouncements.

The emergency room is one place to start. Here is where decisions are made as to the presence of acute alcoholism, presence or absence of other physical or emotional disabilities, and the individual's need for hospitalization or other appropriate disposition and care.

Hospitals vary in size, and they may or may not have a resident house staff, they may be voluntary, private, or governmental, and they may care for all kinds of patients or be limited to just one category—pediatric, for instance. They may be located in a ghetto or suburb, and there may or may not be another hospital within reasonable proximity.

All these factors affect emergency services, as will other considerations: requirements of State law, requirements of hospital accreditation, and availability within the institution of a psychiatric service, an intensive care unit, outpatient department, and beds for emergency admissions. The hospital's policy concerning alcoholism—even interest on the part of one member of the staff—will influence emergency room services for the inebriated patient.

Most hospitals do not have house staff or doctors present at all times, especially at night, who are equipped to "immediately" recognize an emergency situation and its cause and to take appropriate action. The one constant factor in the emergency room is the nurse. Because there is need for a diagnosis and a decision concerning the medical evaluation, the duties of nurse and physician must be delineated. Hospital policies in relation to observation of acute alcoholics who do not need hospitalization, to provision of hospital care for those who need it, and to proper aftercare for those patients who can be sent on their way after recovery or for those who are true chronic alcoholics must be enunciated.

The presence or absence of a community program for alcoholics does not negate the need for sufficient information about alcoholism by the emergency room nurse. She needs to be knowledgeable about pharmacologic factors related to alcohol, complications associated with excess alcohol ingestion, and the procedures necessary to assist in the initial evaluation of the inebriated patient.

Ethyl alcohol is one of a group of aliphatic sedatives which includes paraldehyde, barbiturates, chloral hydrate, Nembutal, ether, etc., all of which can be cross-addictive. There is no cross-addiction per se of sedatives with narcotics.

The blood alcohol level results from three factors: the total amount of alcohol ingested, over how long a period of time it was taken, and the recency of the last drink. Initially,

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alcohol reduces psychomotor activity and provides some relief from anxiety, tension, or whatever pressures that the individual feels. This increase in psychomotor activity is heightened in proportion to the duration of drinking, so that a person who has been drinking for days develops high psychomotor activity level which can produce several effects. He may shiver, shake, sweat, and have cardiac palpitations, all of which constitute the so-called withdrawal syndrome. This is a misnomer because the individual may still be drinking when these symptoms occur. But, if his drinking stops during this period of heightened agitation, he can develop hallucinations and delirium tremens.

There are routines which are fundamental to the proper management of the inebriate brought to the emergency room. The individual brought in by the police may have been booked and must be returned to custody. What medical information can or should be given to the police is delineated by the hospital counsel. To a degree, this is determined by the nature of the charge.

Whoever brings in or accompanies the patient must be queried to ensure accurate information and prevent misinterpretation. It is necessary to obtain a history of the alcohol intake during or prior to the present incident and of previous similar occurrences, possible injuries, concomitant physical or psychiatric disabilities, and any drugs that the patient is taking.

The legal counsel and medical staff committee will have established policies relating to what legal permission is required before chemical tests for alcohol concentration in a patient's breath or blood can be performed. Specific examination should also be done to rule out, as much as possible, medical illnesses whose symptoms resemble those of acute inebriation or be associated with it. The stuporous, confused, or stumbling individual with the odor of alcohol on his breath may, for example, be in incipient diabetic coma, have postepileptic confusion, have made a suicide attempt with one drug or another, have unsuspected pneumonitis, or have had a minor stroke.

Careful observation and examinations can confirm or reject the presence of problems other than acute intoxications. The practiced hand on the forehead can establish the presence of fever or impending shock if using a thermometer is dangerous. The pulse rate and a blood pressure reading may indicate active cardiovascular disease. If there is one-sided weaknesses of the face, arm, or leg, and unequal pupils, the patient may have had a stroke.

Urinalysis should be done to rule out the presence of severe diabetes or renal disease requiring emergency hospitalization. Examination and palpitation of the head and checking on the movement of the neck and limbs can reveal a contusion, fracture, or concussion. A bitten tongue indicates that an epileptic attack has probably occurred.

The most difficult patient to evaluate is the one who has swallowed enough of a drug or poison to cause eventual death when coupled with an alcoholic intake. Examination of the patient's pockets may reveal clues: pills, a hypodermic syringe, a physician's prescription, a hospital clinic card, or a wristband stating that the patient is a diabetic. Astute questioning and investigation can provide the answers to most of the questions.

A record form approved by the hospital's legal counsel and medical staff should be used to be sure that all necessary information has been ob-

tained, necessary examinations carried out, and observations and findings recorded.

A simple neurologic examination is mandatory. A chest X-ray should be taken because alcoholics frequently have unknown, active, infectious pulmonary tuberculosis. Pneumonia or pneumonitis is not a rare complication of alcoholism, especially during the winter.

The unruly individual can be brought under control by restraining him for a minute or two while he takes two or three breaths of aromatic spirits of ammonia. Breathing this usually brings about a sudden pacification. It is useful for the maudlin or semistuporous person.

For the comatose patient, electrolyte and blood gas studies in addition to blood chemistries are essential. This patient requires medical management. If there is an observation area in the emergency room, this patient can be observed there and have whatever laboratory tests, fluid regulation, and medications that the physician deems necessary. If observation in the emergency room is not possible, the patient will have to be cared for on a medical ward or the intensive care unit.

The real problem is not the comatose patient, who represents but a small proportion of the acutely alcoholic, but the individual who is severely intoxicated without coma. This includes persons who have hallucinations as well as those in varying stages of delirium tremens. These patients are the real medical emergencies.

Most acute alcoholics usually need only a place to "sleep it off," but not all hospitals can provide such services. In view of the Supreme Court's warning, health facilities that receive significant numbers of acute alcoholics may have to reorganize the physical arrangements in their emergency rooms so that acute alcoholics can "dry out" there, or create a care unit to make possible adequate nursing care and medical monitoring for these patients.

Several areas have initiated programs for alcoholics, the goal being a comprehensive, community-based series of services for those who are acutely intoxicated, as well as those who are chronic alcoholics. Several basic factors underlie each of the programs:

Effective management requires integration of services;
There must be continuity of services;
There must be leadership by physicians;
There must be limitations concerning the populations to be served;
The civil rights of the persons served must be protected;
The services of health, hospital, and police personnel must be structured to be in consonance with these civil rights.

It behooves representatives of hospital associations, medical societies, and nursing associations to plan the necessary community programs for the management of the acutely intoxicated and for the rehabilitation of the chronic alcoholic, as well as determine their own roles in these programs. They must be able to give correct answers at any time to people in need. To do this, there must be a community base to the program, not just doctors and nurses in a hospital. And there must be commitment to the program on the part of all concerned.

Psychosomatic Aspects of Malnutrition During Adolescence

HILDE BRUCH

Adolescence is characterized by marked increase in size and body weight. Growth in stature precedes gain in weight; the filling-out process is greater in girls than in boys and appears to be determined, more than any other factor, by external conditions. It is not uncommon that during this period some individuals become plump and others overslim. These are normal variations which need to be differentiated from pathologic disturbance of weight and size.

The present cultural attitude, most pronounced in the United States, condemns any plumpness as deplorable fatness. Modern adolescents have it drummed into them by well-meaning parents and physicians and by cosmetic advertising, that the only way to be respected and admired is to be thin. Adolescents have always been preoccupied with their physique, the adequacy of their puberal development, and their attractiveness. To this has been added the fear of being fat. Often it is the parents who are vehement in demanding that an adolescent, in particular a daughter, be slim, and they will conduct campaigns against even mild degress of plumpness. Invariably this expresses the existence of disturbed intrafamilial relationships.

Many obese adolescents have been obese children and many, though by no means all, suffer from emotional problems. Those with a fairly healthy mental attitude will face the social problems of being plump with equanimity or will make the decision to correct their weight on their own. A precondition is that they experience themselves as well-differentiated individuals, competent in their self-concept and sense of identity.

This paper focuses on those who are seemingly successful in controlling their weight but who are in reality crippled in their whole adjustment because they often suffer from nutritional deficiencies and can maintain the low weight only at the sacrifice of active participation in life. The extreme is represented by anorexia nervosa. Though on the increase, anorexia nervosa is a rare disease. But chronic malnutrition based on abnormal preoccupation with weight is common but not readily recognized as abnormal because it appears under the guise of desirable slimness. These chronic reducers are "thin fat people" who are likely to escape correct diagnosis because our slimness-conscious culture will admire their starved appearance instead of offering them help.

Increasingly often they come to the attention of psychiatrists. Though successful in controlling their weight, they remain unhappy and dissatisfied. One thin fat girl's description is characteristic for all: "I am never satisfied with the way I look. I always keep changing things about me, everything. I disapprove of everything about myself. Just everything about me is wrong." This theme runs through their basic attitude. Just as food never satisfied them, so they are now dissatisfied with their new slim figure and disappointed in what it can achieve for them.

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An 18-year-old girl became acutely depressed during her senior year in high school. Since age 15 she had been obsessed with dieting. She was tall and her weight had never been excessive. At times she had forced it down to below 110 pounds. However, this did not relieve her problem; she was acutely unhappy and embarrassed by remarks about her being "too skinny." She tried to participate in social activities and dated a young man who seemed to be in love with her. She had no real feelings for him and became alarmed when she gained some weight during this more relaxed period. Now she missed the remarks about how thin she looked. She became depressed and acutely suicidal and had to interrupt her schooling. The obsessive concern with weight and figure was a camouflage for her deep-seated self-doubt and identity confusion.

In a 13-year-old girl, fear of fatness interfered with puberal development. She had been a tense, overambitious child. She was an excellent student and had had a small circle of friends. She had also clung to a diet because she had noted at the time of an annual checkup that she had gained 12 pounds going from 70 to 82 pounds. If this continued, she feared she would become "too fat." She was so determined not to gain weight that she maintained her weight at the same figure for another year, though in treatment. She became conspicuously thin and was easily exhausted, but she was far from being emaciated to the point that is characteristic for anorexia nervosa. For this girl, dieting was like a magic exercise to keep her body childlike, to keep it from developing to maturity. She was aware that her fear of fatness was unrealistic, that it indicated her need to be "different" from other girls who enjoyed their feminine development and had changed in their interests. Treatment required active work with both parents who had camouflaged their own conflicts by arguing over their daughter and her development.

An example of chronic starvation interfering with a professional career in which slimness is a prerequisite is the case of a 19-year-old model. She was definitely undernourished, but was told by prospective employers that she must watch her figure, that she was getting too fat. She felt that the great hazard of her profession was constant fatigue. After a discussion of the details it became apparent that most of this fatigue was related to being hungry all the time. She had observed that young girls who work as models frequently faint from hunger. She was alarmed when she fainted for the first time but then recognized it for what it was. In view of her enjoyment of her work, the good pay, and her sense of accomplishment, she felt that it was worth the price.

The real danger to the health of adolescents lies in the fact that this starved and undernourished frailness has been made the beauty ideal. There are millions of young girls who starve themselves with no compensation except that of vanity served by looking like an envied model whose slimness is a well-paid professional pose. Yet many young women make a fetish of being thin and follow reducing diets without awareness of or regard for the fact that they can do so only at a price of continuous strain and tension and some degree of ill health. When they became young mothers they complain continuously about fatigue, about their children's problems, their own irritability. They have become used to living on a semi-starvation diet. Never having per-

mitted themselves to eat adequately, they are unaware of how much of their tension, bad disposition, irritability, and inability to pursue an educational or other professional goal is the result of chronic undernutrition.

There is a great deal of talk about the weakness and self-indulgence of overweight people, but little is said about the selfishness and self-indulgence of those who make their appearance the center of all values and subordinate all other considerations to it. Young people are not aware of the emotional sacrifice of staying slim. If such patients seek medical help they will come with complaints which they relate to various bodily functions and which are commonly attributed to nervous tension and exhaustion. It is customary to prescribe tranquilizers for them. To correct the habitually abnormal eating pattern would be a more logical treatment.

In anorexia nervosa correction of the low weight is often made the primary if not the exclusive goal of medical efforts. Much valuable time may be lost if insufficient attention is paid to the serious underlying psychologic problems. Weight gain can be achieved through many methods, but a lasting cure with a healthy adaptation as well as adequate nutrition requires correction of the underlying problems and the misconceptions.

A typical case of anorexia nervosa illustrating the futility of treatment without correction of the basic disturbance is that of an 18-year-old man whose eating difficulties had begun when he was 12 and his family moved to a new neighborhood. His parents described him as having been a "perfect child." His father spent much time with him and took pride in the boy's athletic abilities. His mother gloried in the way he responded to her care. He became preoccupied with exercise for its own sake, getting up early for long-distance running or doing calisthenics to the point of exhaustion. Much later, after real improvement had occurred, he explained that he had hit on the idea of eating less when the overexercising became too strenuous. The compelling force was the need to burn up energy to get rid of everything that came from "them." Staying thin became a goal in itself, the only guarantee that he owned his body and was not his parents' property.

The course of this patient's illness offers a good example that psychotherapy must be directed to the underlying problems, not to the manifest symptoms. He did well in response to a psychotherapeutic approach developed to correct the basic deficits in his self-concept. It took more than a year of intensive work before he recognized the futility of a struggle for identity through manipulation of his body and before he developed some awareness of his inner sensations and trust in his resources and capacities. Once this had been accomplished he began to eat normally, actually enjoying good food as he had done as a child. During the second year of treatment he received testosterone to stimulate growth and puberal development. He is now nearly 30 years of age, has no problems with food or with maintaining a normal weight, and feels competent in both his work and his overall functioning.

These nonspecific pictures vary considerably in the severity of illness and accessibility to treatment. In each case a clear recognition of the underlying problem is essential for successful psychiatric and medical treatment.

Rehabilitation and Community Mental Health: Employability and Disability Issues

ROBERT REIFF and SYLVIA SCRIBNER

Advances in drug therapy and expansion of community mental health programs have enabled many patients to live and work in the community. This has led to a shift in therapeutic goals. Treatment is more concerned with increasing the functional capacity of the patient so that he may lead as normal a life as possible. Rehabilitation and habilitation rather than "cure" have become the goals of many treatment efforts.

These changes are not reflected in the world of work. Mentally ill blue-collar workers lack even that level of job and income protection extended to workers with physical illnesses. Decisions as to employability or compensable disability are handled on the basis of obsolete and outdated concepts and practices.

Relationship Between Mental Illness and Ability to Work

One important finding in recent professional advances is that there is no necessary or simple connection between the presence of psychiatric illness and the *ability* to work. This is different from many physical illnesses where rest and abstinence from physical activity are important parts of treatment.

There has been a belief that "pressures of work" may be responsible for mental illness. While in a small number of cases this may be true, it is now recognized that useful and meaningful work can have an integrating effect and often prevents a complete breakdown of the mentally ill person, or aids in his rehabilitation. Even when the illness is so serious as to require round-the-clock hospitalization, many patients have the capacity to perform factory jobs and the opportunity to engage in such work is a valuable mode of therapy.

The implication is that conventional psychiatric diagnosis is not a reliable basis for determining ability to remain at work, nor can reinstatement to employment depend on a "proof of cure" or "recovery." New methods of appraisal are needed. The assessment must take into account the characteristics of the job in question, the social milieu in the plant, and the individual's capacity to function in the particular circumstances. There will be many workers who, for a temporary or indefinite period, may not be able to carry on their usual routines. Some will be unable to face the pressure of specific jobs or social requirements in the industrial and commercial work worlds. For some, return to their previous employment may be contraindicated and they may need help in making a shift to another shop or another line of work. Here, too, there must be a specific assessment of the relationship between the worker's illness and his job.

Employability of the mentally ill involves some of the same questions as employability of workers suffering physical disabilities. The important conclusions for collective bargaining and public policy purposes are:

1. Mental illness does not necessarily equal inability to work.

2. Treatment of the mentally ill can often be facilitated if the individ-

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ual is enabled to continue to function in his everyday activities.

Assessment of the Ability to Work

A multitude of medical, managerial, and public agency people are involved in assessment of the mentally ill worker's ability to work. All operate from their own points of view and jurisdictional spheres. They look at one piece of the problem without the benefit of any common guidelines or principles. This takes place in the context of a history of the mental health network's alienation from workers which has resulted in discrimination against workers in diagnostic and treatment practices.

Treatment agent—The treatment agent most often is a private physician or psychiatrist. Medical professionals usually do not become involved with employability or disability unless the employer requests an opinion. In most cases they deal with a representative of management, participating in decisions about the job often without the knowledge of the union. In some disputed cases the union will request an opinion from another treatment agent.

Employer—Practices vary as to how a worker is expected to prove his "ability" to perform his job on return from a leave of absence for mental disorder. Often there is an informal probationary period during which the employee is "watched" by his foreman and "confidential" reports made.

State employment service—If the patient loses his job and needs placement or is in the open job market, his ability to work or the kind of work he is capable of performing is evaluated by counselors. Handbooks often include "guidelines" indicating which jobs are suitable for those suffering or having suffered from mental illness.

Vocational rehabilitation administration—Intimately involved in the training and placement of workers with psychiatric problems, the State vocational rehabilitation administration can be of help. But its potential is limited by its lack of integration with the treatment agencies and the job situation. In some instances, cooperation between the VRA and a union has been worked out but this is rare.

Workmen's compensation boards—Benefits for mental illness are availabe under permanent disability provisions of workmen's compensation laws. Again the question of disability is adjudicated in terms of the definitions which have evolved in the operation of compensation machinery over the years. In most cases these have little relationship to a functional analysis of the mentally ill patient and the job.

Social Security Administration—Thousands of former workers are receiving monthly payments under the disability program of the Social Security Administration for compensable mental conditions. These are defined as impairments which render the individual unable to engage in any substantial, gainful activity or which can be expected "to result in death or which have lasted or can be expected to last for a continuous period of not less than 12 months." Because this definition is so general, every individual case requires interpretation. Benefits remain for the most part restricted to those suffering from proved, long-term disability.

All of this demonstrates one of the most pressing problems: the fragmentation of human services. Because government and private organizations work on a laissez-faire basis, a worker can be refused reinstatement on his job by management or ruled "unable

to work" by the employment service and at the same time be denied social security benefits on the grounds that no statutory "disability" has been demonstrated.

This situation will result in serious problems. As treatment methods improve and permanent disabilities are diminished through more comprehensive rehabilitation programs, fewer workers will qualify for benefits.

Mentally ill workers must be allowed to work either through modifications of industry's methods of assessment of employability or adjustments in work assignments; or benefit programs must be amended to provide for those experiencing periods of joblessness. The former is a collective bargaining question, the latter, an administrative and legislative question—both areas of action for labor organizations.

It has been argued that labor is not qualified to participate in the determination of whether or not a mentally ill worker retains his job or qualifies for benefits in lieu of wages, and that this decision must be made by a qualified *medical* person. As it now stands, this determination is often in the hands of nonmedical agency personnel and/or management itself. They make use of medical opinion, but they arrive at judgments going beyond it. Labor's exclusion from this area is not because of lack of technical qualifications.

Medical Organizations and their "Guidelines"

One primary reason for labor's exclusion has been the managerial orientation of the professional *medical* organizations.

A review of the medical and psychiatric point of view reveals—

1. There are no medical or psychiatric guidelines which recognize the importance of taking into account the individual's actual capacity to work even though he is mentally ill, or the importance of remaining on the job as an aid to treatment. In addition, the implications of new methods of treatment for workers which make these alternatives possible are not considered.

2. Most present-day psychiatric evaluation of employability or disability operates on the traditional basis of an assessment of inner personality dynamics. Little attention is paid to evaluating the skills and assets the individual retains or can develop and which are usable in the work as well as in the treatment process. In this respect we cannot yet speak of mental health rehabilitation even in the limited sense in which we speak of rehabilitation medicine. Although its need is recognized among the more enlightened professionals, a body of knowledge about mental rehabilitation does not exist. It may be some time before it is developed. Labor can be helpful in this process by contributing its knowledge of the job situation and participating in the decision-making process regarding employability and disability and by participating in experimental mental health rehabilitation programs.

In the meantime, there is no need to live with the old myths and restrictions. Since work ability or disability is related to specific work requirements rather than some general characteristic of the illness, such questions as "Has he been cured?" "Does he have insight into his illness?" and "Can you give me proof of recovery?" are irrelevant.

Some Preliminary Recommendations

It is necessary to rethink and redefine the concept of mental disability in a way which provides financially for the worker who is functionally dis-

abled for any length of time and which at the same time promotes programs and opportunities for him to become functional again. A worker would receive financial assistance as long as he is functionally disabled, whether it be a few days, several years, or a lifetime. Such assistance could be made conditional upon the worker participating in some program designed to help him become functional again, such as treatment, aftercare, rehabilitation, sheltered workshop, protected on-the-job situations, and so on.

Community facilities for improving mental health services for the worker are still too few and pilot programs in rehabilitation too scarce to implement more uniform employment practices for the mentally ill. But labor representatives, employers, and the government agencies might review the guidelines and practices officially or unofficially employed, for the purpose of seeing that workers are not left without income protection because they fall between the cracks of "ability to work" and "permanent disability." New guidelines and practices should be formulated which reflect the modern knowledge and best treatment practices.

Collective bargaining agreements should meet the needs of the mentally ill worker as well as those of the physically ill. An analysis of existing practice and contract language should be made with the aim of eliminating obstacles to community treatment of the mentally ill worker.

Unions should increase their participation in decisions of employment and compensation agencies with the aim of assisting them in arriving at functional evaluations of mentally ill workers.

As community treatment expands, there will be more demand on medical departments in industry to make decisions, which they are in no position to do. At this point, community mental health centers can fill what is a partial vacuum, not only as a third party in disputes, but as a professional group through whom referrals can be made and treatment provided.

Industrial psychiatry and psychology must free themselves from their traditional structure. Mental health professionals with the best of intentions who work for industry are compelled to serve the interests of management. There is nothing wrong in having this viewpoint, but we must recognize that it is present and that it separates the mental health professional from the labor force because management's interests can be and frequently are in conflict with labor's.

New Federal and State programs provide an excellent opportunity for a new orientation in industrial psychiatry. The neutral setting of the community mental health center can foster the creation and growth of an independent "third-party" type of industrial mental health which is dedicated to serving the needs of workers. A program based in, and an integral part of, a community facility would have a better guarantee of meeting the problems of the work place—precisely because it is not located there.

Labor's cooperation might be assured if functional diagnoses were made with their participation and in a setting which avoids the possibility of violation of confidentiality and misuse of the grievance procedure by the company. The support of community mental health centers by management- and union-financed mental health insurance programs would help promote the development of appropriate treatment and research.

Brief Sleep Treatment with Chlorpromazine

H. Spencer Bloch

In the psychiatric management of severely disturbed soldiers in Vietnam it was necessary to treat all hospitalized psychiatric casualties on a single, small, open ward without facilities for sequestering violent or uncontrolled patients, without somatic therapies except for medication, and with limited numbers of staff. This paper describes a technique which became such a valuable tool that it may have application for crisis intervention in the civilian community.

Sleep treatment for psychiatric conditions has been described both as a therapeutic modality in itself and as an adjunctive therapy either for potentiating therapeutic alliance (e.g., anaclitic drug therapy or psychotherapy) or as part of a more somatically oriented regimen (e.g., "depatterning" treatment of schizophrenics and "hibernation" therapy). It has probably been attempted for patients with every psychiatric diagnosis. The results vary so greatly that no consensus exists regarding the indications for sleep treatment, types of patients who might respond favorably, and whether it is more efficacious in psychotic or neurotic illnesses.

Traditionally sleep treatment has been maintained for long periods of time (3 to 30 days, usually 10 to 20), sometimes fairly continuously, though more often for 12–20 hours daily. At least in America the inefficiency of the technique seems to have overshadowed any therapeutic efficacy and discouraged continued investigation of its value, for the prolonged narcosis necessitated intensive and expensive nursing care, and the incidence of respiratory complications was formidable. The technique described here utilized continuous sleep for 24 to 48 hours. The abbreviated duration minimized the necessity for prolonged, expensive nursing care, and also the incidence of respiratory complications.

The therapeutic attempt was to achieve a chlorpromazine-induced sleep without using adjunctive narcotizing medications and to do so as quickly as possible after the patient had been hospitalized and introduced to the ward staff and ward procedures. Chlorpromazine was chosen because of its relative safety with regard to serious side effects, drastic allergic reactions, and lethal toxicity. It was also selected because of its reorganizing effects on human psychological life (specifically psychotic conditions).

Violent, assaultive or otherwise uncontrolled, disorganized or agitated behavior was frequently the precipitant for psychiatric hospitalization in Vietnam. Such patients were introduced to the staff and seen by the psychiatrist who attempted to obtain a history from the patient, to assess his mental status and perform a physical examination. The patient was told that he would be given medicine which would enable him to sleep for a day or a little longer after which his condition would be improved. He was administered oral or intramuscular doses of chlorpromazine every hour until a sound narcosis was achieved and thereafter as necessary.

Treatment was initiated and maintained with oral doses of 100–400 mg. of chlorpromazine or intramuscular doses of 50–100 mg. and occasionally 200 mg. when oral medication was re-

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fused. Trihexyphenidyl, 2 mg. per each 400 mg. of chlorpromazine was administered prophylactically for extrapyramidal side effects. This approach was used regardless of the patient's presumptive diagnostic category. He was put to bed on the open ward. Attention was paid to his vital signs and observation made for possible allergic phenomena and signs of respiratory distress. Physical restraints were sometimes used if necessary until sleep was achieved. When he awoke he was taken to the latrine when necessary. If the patient complained of great hunger upon awakening he was fed. However, as much as possible continuous chlorpromazine-narcosis was maintained for 24–28 hours and never longer than 72 hours. At that point the patient was allowed to waken and then mobilized in the ward milieu program.

Case 1—A 19-year-old medic with 4 months in Vietnam was sent in directly from his unit where he was reported to have been combative and delirious. He kept calling out the name of a soldier who had been killed. He was struggling wildly, calling out "Please sir, let me go get Sims. I've got to get him. He's been hit. He'll die. I don't like him, but I've got to get him." He was experiencing illusions and perhaps hallucinating as well. He attempted to get up from the stretcher on which he was strapped. He was put to sleep for 24 hours and then allowed to stay awake for a few hours around mealtimes, but kept asleep for much of the second 24 hours as well. While awake he was managed as a case of combat exhaustion. During the third day medication was discontinued. He was functioning appropriately and well. He reported having been in severe combat before his symptoms developed. He performed well—caring for the wounded under enemy fire. Sims had been blown up and he had to collect and carry Sim's body parts in addition to ministering to wounded men. He persisted in his duties and did not sleep for 38 hours prior to his admission because he had been designated greater responsibility and felt that he should remain awake while there was enemy activity nearby. He had lost his taste for C-rations and lost 5–6 pounds in 3 days. As his unit prepared to move in pursuit of the enemy, he "fainted." That was the last thing he recalled. He was still a bit emotionally labile and a little compulsively intense in his pleas to return to duty. He was eating well, was rested and without evidence of incapacitating psychiatric symptomatology. He was returned to full duty on his third hospital day. Followup 3 months later revealed him to be asymptomatic, to have been promoted and made permanent senior aidman.

Case 2—A 24-year-old paratrooper with a distinguished record was hospitalized after he tried to leave camp to see General Westmoreland with a message from God. Within 10 days prior to his admission he became imbued with the beauty of nature all around him, disenchanted with the war and with fighting, and resolved to become a stand-up singer. Returning on a plane from R&R during a severe storm, he experienced "God" in the form of a deep moving feeling in his stomach. From that point on his behavior became progressively more hypomanic, his mood euphoric and his thinking transiently delusional (being preoccupied with the idea of spreading peace and stopping the war in God's name.) Although he had been heavily medicated prior to admission, his mental status revealed hypomanic features of euphoria, grandiosity, vehemence, thinly veiled irritability, flight of ideas, pressured speech, inappropriate jocularity, marked hyperac-

tivity, and delusional ideation. There was no history of drug use. He was put to sleep for 24 hours with chlorpromazine after which his hyperactive behavior subsided and his hypomanic ideation and affect abated. He became increasingly more appropriate in thought and action. He did retain his desire to be transferred from the combat unit because his heart was no longer in it and he worried about a recurrence of symptoms and the adverse effect that would have on his man. He was discharged to full duty on the 10th hospital day and was seen in followup 2 months later. He had been transferred to a noncombat job, was functioning without symptoms, but retained his intention of leaving the army and becoming a professional entertainer.

Case 3—A 24-year-old private was admitted from the stockade because of bizarre speech and behavior. He had been serving a sentence for failure to obey an order and for assault. Although there was a possible history of marihuana usage, no clear-cut precipitants were reported to explain the onset of his symptoms. At admission he was hyperactive and exhibited logorrhea. No meaningful contact could be maintained with him. He was place on sleep therapy for 48 hours with large doses of chlorpromazine but his narcosis was punctuated by outbursts of uncontrollable screaming and agitation. Gradually his outbursts lessened and he was able to divulge some anamnestic data. He reported unstable peer and family relationships and difficulties with civilian authorities as well as prior disciplinary action in the service, though no history of overt psychiatric disorder. He was maintained on high dose phenothiazines (chlorpromazine 1600 mg. and trifluoperazine 40 mg. p.o. daily) for the duration of his hospitalization and evacuated from the war zone for further treatment on his 9th hospital day.

As a tool for management of severely disturbed patients on an open milieu ward, this technique proved effective and efficient in several respects: agitated, disruptive and assaultive patients were allowed to begin to reconstitute with a minimum of embarrassment to themselves, a minimum of physical restraining, and with no injury to staff or other patients. A minimum of anxiety was aroused in fellow-patients from observing violent or agitated behavior or from the efforts of corpsmen to restrain the uncontrolled one. Especially in the presence of limited numbers of personnel who had responsibility for other patients as well, the ward corpsmen's level of anxiety about managing such patients was reduced.

Our impression from 114 patients treated with brief sleep treatment with chlorpromazine was that people with acute situational and stress psychoses, manic reactions, pathological intoxications, and combat exhaustion syndromes responded remarkably well and dramatically.

As a pragmatic diagnostic tool, the technique proved valuable in cases where minimal historical data were available and differential diagnosis was difficult. In such cases the response to sleep treatment became a prime factor in establishing a diagnosis. Those who responded favorably were diagnosed as situational or stress psychoses and those whose behavior came more under their own volition but whose thought processes remained disorganized were diagnosed schizophrenic. This is a pragmatic approach to nosology, and some of those who responded may well have been schizophrenic or schizophreniform, and were phenomenologically similar.

We found that the more readily

narcosis could be obtained and the more sound the slumber, the more dramatic and salutary the therapeutic outcome. If sound sleep could be obtained within 1 to 6 hours after the initial dose of medication, then the patient's symptoms improved markedly after the course of sleep treatment. Where sleep was achieved with difficulty during the first 12 hours and maintained with difficulty, then following the 48-hour course of treatment, significant behavioral improvement could be anticipated (though maintenance doses were required), but cognitive disorders persisted and were more evident.

One phenomenon observed in several of the schizophrenic-type cases involved very disorganized, agitated patients who responded with a seemingly complete restitution to a nonpsychotic state following sleep treatment, only to relapse within a few days and remain in a psychotic or partially reconstituted position despite repeated courses of brief sleep treatment. Relapse usually occurred as they were being readied in the ward milieu for return to duty or shortly after they had returned to duty. Our explanation is one which presumes that external stresses can precipitate psychoses, at least in predisposed individuals. Anticipation of the fears that they would again encounter at duty was sufficient to overcome the reconstituted ego defenses of these patients and they relapsed into a psychotic response.

The major complications were of two types: those related to prolonged narcosis and those related to chlorpromazine. Regarding the former, we know of only one case in which such a complication may have developed. Within 10 days following discharge, one case was hospitalized for pneumonia. This group of complications was probably minimized by the relative brevity of the sleep treatment.

Regarding complications related to chlorpromazine, the potential dangers of hypotension as well as allergic reactions were probably maximized. No serious or significant complications of this nature occurred among the 114 men who received this treatment. The fact that most of them were young, organically healthy soldiers in good physical condition should be emphasized. Hypotension did occur, but the men were kept in bed from the time treatment began except to go to the latrine, so that the danger of injury from falling was minimized. Blood pressures were monitored every 4 hours in sleeping patients and when less than 90 mm. systolic, the patient was placed in a low Trendelenburg position. No cases of jaundice, abscesses at injection sites, withdrawal seizures, or renal failure occurred. Dyskinetic reactions were observed occasionally but responded to intravenously administered diphenhydramine.

The decision about what treatment modality to utilize at any time, and even what dose of psychotherapeutic medication to administer is not a decision made in vacuo. It depends on the available alternatives, the severity of the symptoms, evaluation of the efficacy of adjunctive factors in the patient's environment which will aid the therapeutic endeavor, and the relative danger of the various treatment alternatives and dosages. While not recommending that drug or any other treatment be conducted in a cavalier fashion, this paper is written to suggest a way of reconstituting severely disorganized people when there are a minimum of adjunctive or alternative techniques available.

The Hidden Addiction

ARTHUR D. MOFFETT and CARL D. CHAMBERS

Drug abuse has become so prevalent as to occupy a significant amount of the time of any mental health professional. In an attempt to deal with these problems, mental health professionals have sought information of other groups dealing with drug abusers. The group with the most experience is law enforcement personnel. With the passage of the Harrison Act of 1914 and other Federal and State laws, opiate addiction was redefined to become a criminal offense rather than solely a social problem.

Law enforcement personnel often view all drug abuse within the frame of reference of "heroin-street addiction." This report is an attempt to broaden the criminal model by describing a drug-abusing population, largely unknown to law enforcement personnel: the nonnarcotic abusers.

We collected life histories of 10 nonnarcotic drug abusers who had requested treatment from the NIMH Clinical Research Center. Typically, these addict-patients were Caucasian males over 35 years of age from cities with populations over 50,000. Formal schooling ranged from 5 to 20 years; the average was 13.7. College degrees and high-status occupations were common. Drug abuse began after adulthood and continued for an average of 5.8 years. These patients began to use drugs for medical or quasi-medical reasons and were able to maintain this medical orientation, purchasing their drugs inexpensively from legal suppliers. Extensive experimentation with other nonnarcotic drugs was prevalent.

Suicidal gestures—All patients reported a crisis in their lives that led them to consider suicide. Commonly several suicidal gestures had been made prior to the onset of drug abuse as well as following it. The gestures following onset usually consisted of taking overdoses of a sedative.

Alcohol abuse—Almost half of the patients reported that excessive drinking had been a factor in their lives. All alcohol abusers reported their drinking behavior had terminated after they began using drugs.

Prior psychiatric hospitalization—All reported a history of psychiatric hospitalizations, ranging from one to eight with an average of two. These addict-patients could reasonably be viewed as psychiatric patients—as they view themselves. The nonnarcotic addict retains the self-concept of a sick person, and he views his addiction as a medical problem to be treated with medicine.

Marital problems—Almost all had been married and reported they were experiencing or had experienced marital difficulties. None had achieved a satisfactory interpersonal relationship with a member of the opposite sex. For the most part these patients lacked warmth and acceptance. This was an area from which a large number of psychosocial problems seemed to emanate.

Criminal behavior—Most of the patients had not engaged in criminal activities. Because of this, legal detection of their addiction and subsequent punishment were minimal.

Because this type of addict is protected and hidden during his drug-abusing career, the criminal model is not an appropriate frame of reference.

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A majority became addicted while being legitimately treated for stress or depression. Neither the incidence nor the prevalence of this type of addiction is known. Estimates are that one of every four adults is using a psychotropic drug, i.e., tranquilizers, sedatives, or stimulants. Any user of a drug must be viewed as a potential abuser.

Individuals addicted to nonnarcotic drugs are beginning to seek mental health facilities for treatment. Not only will the individual need treatment, other family members may also need treatment. The incidence of drug abuse among other family members was high—with most of the abusers being spouses. The mental health agency must be prepared to accept these patients and their families into treatment.

Ninety percent were addicted to the barbiturates and sedativelike drugs. Individuals abusing large quantities of barbiturates will show anxiety, nervousness, insomnia, tremors, and abnormal electroencephalograms; 75 percent will have at least one seizure; and 60 percent will become delirious unless withdrawal is supervised. The nonmedical mental health professional needs to be aware that this is not only a serious psychosocial problem but also a medical problem.

The majority of nonnarcotic addicts do not become involved in illegal activity after becoming addicted, whereas heroin addicts are often involved in one of three illegal activities—shoplifting, burglary, or selling drugs. Most heroin addicts spend an average of $50 per day on drugs, while the nonnarcotic addicts spent only $3 per day to support their addiction.

Heroin addicts are labeled "criminal deviants" because they are unable to escape detection by the police. Nonnarcotic addicts obtain their drugs through legal channels, and because of a steady access to drugs usually are not labeled criminal deviants even after becoming addicted.

The heroin-street addict has learned to live by his wits, and "conning" behavior within this group has been described. In this respect, the nonnarcotic addict resembles the heroin-street addict. While the nonnarcotic addicts in this study did not have to hustle to obtain drugs, they did con physicians into providing them with drugs. In some cases they may not have conned the physician consciously, but they did use their psychosocial illnesses to their own advantage. Nonnarcotic addicts center their activities around physicians' offices, hospitals, and pharmacies. Many of them would not know how to purchase drugs from illegal sources.

Mental health professionals must rely on their own expertise in treating the nonnarcotic abuser. Persons from whom the mental health worker has traditionally sought information on addiction—law enforcers—cannot aid him with this type of addict.

Awareness of the psychosocial factors influencing the onset of drug abuse, including the personal/social crisis that led the patient to seek treatment, must be understood by the menal health professional in order to treat this type of addict. The treatment person must be equipped to relate adequately to the patient's total psychosocial difficulties to set a course of treatment that will sustain the individual even after any immediate crisis has been resolved.

Entering College Student's Preparation for Self-Regulation

EDWARD S. BORDIN, MORTON H. SHAEVITZ, and MAURY LACHER

The conflict between generations has been well documented. Most of this conflict has occurred on campuses where university officials have faced student demands for increased participation in the governance of the institution and for self-regulation in all areas which cannot be defined as "academic."

These changes bring to the fore questions of educational and psychological significance revolving around "self-regulation." How is it best understood? How and when is it developed? How much individual difference is to be expected? What happens when a student enters college unprepared for the demands for self-regulation? This article reports the results of an exploration of these questions directed toward the range of preparation for self-regulation students will have experienced prior to matriculation. We also were interested in the realism of parents' expectations regarding the degree to which the institution would regulate their children's lives.

A questionnaire with an introduction signed by the Vice President of Student Affairs was sent to the parents of all freshmen. Of the 4,548 sent, 2,219 questionnaires were returned. Many parents added comments or accompanied the questionnaire with a letter. Those who answered were somewhat better educated than the parent group as a whole, but the respondents were, demographically, similar to the total population.

The questionnaire consisted of three sections: Parents were asked to indicate, on a 5-point scale, the degree of choice they have given their offspring in 29 specific behavioral areas, how much freedom they would like the university to allow their son or daughter in 21 behavioral areas, paralleling those asked for in Question 1; and to answer a number of demographic items.

Items referring to home behavior included smoking, drinking, dating, friendships, hours, using car, selection of clothes, study time, handling finances, traveling, working, entertaining opposite sex at home, and making educational and vocational decisions. Those referring to campus activities included smoking, drinking, dating, hours, using car, study time, traveling, working, entertaining opposite sex in dormitory, selecting career, and informing parents about accidents or health emergencies.

Parental Control at Home

Parents report giving their sons and daughters free choice in educational and vocational decisions and almost as much freedom with regard to dating and friendships, clothes and finances, study time, and work. But close control was exercised over entertaining the opposite sex and over smoking and drinking. They exert almost as much control over travel.

The overall sex difference is significant. The greatest difference is found in the protectiveness of daughters for travel, dating and friendships, work, or hours expected to be home. Only with regard to study time are parents more restrictive of sons.

The marking of areas as important

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or unimportant provides another form of evidence of the attitudes and behavior of parents. There were wide variances in the designation of the three most or least important areas. Though parents report giving their children wide latitude in making educational and vocational decisions, this is nevertheless an area that they rank high in importance. This is the main place where importance data adds something to what is suggested by control data.

From the point of view of institutions seeking to provide for optimum development of all students, the variability of preparatory experience is of great relevance. The widest variation is found with regard to "hours" where 23 percent of the men are given no latitude, but 31 percent were given full freedom. Thirty-four percent of women experienced restriction, while 25 percent experienced freedom. Even in some areas where parents were most permissive, such as study hours and work, 5–10 percent of freshmen men and women experienced restriction. Similarly, where parents were generally restrictive, such as entertaining the opposite sex, 10 percent of freshmen experienced freedom.

Expectations about the University

Parents expect that their sons or daughters will be given great freedom in the area of vocation and almost as much in dating and friendships but expect great university regulation over decisions whether to notify them in case of accident, illness, or other emergencies and of conduct around sex, smoking, and drinking. The sex difference, though significant, was small. There is much greater consistency than at home, however, in the more protective reaction to daughters.

Relation of Home Treatment to Expectations for University

How are parental expectations regarding control of their children on campus related to their own treatment? Because of the nature of the questionnaire and because living on campus and at home are not completely comparable, direct comparisons present difficulties. However, the four areas of educational and vocational choice, sex, self-indulgence, and social impulse seem similar enough to make direct comparisons. When the means for home and university by area for son and for daughter are compared, in five of the eight comparisons parents want the university to be more restrictive than the home. This particularly is true with regard to educational-vocational issues. The minority reverse trend is exhibited for both sons and daughters with regard to smoking and drinking, where the university is expected to exert less control than parents did. With regard to dating and friendships, parents expect the university to be slightly less restrictive than they were.

Demographic Factors

We find that the husband's education is a significant factor in permissiveness at home and the expectations of permissiveness on campus, especially as applied to sons. Permissiveness was positively correlated with education, but particularly for those with advanced degrees and especially at the doctoral level. One exception is in the educational and vocational area at home, where father's education at the PhD level was associated with a less permissive attitude. Although family income differentiated treatment and attitudes toward sons, there was remarkably little differentiation regarding daughters. Those with family incomes greater than $20,000

tend to be more permissive than those with less. At home, this was particularly so with regard to educational and vocational issues, sex, and the use of the car. The one exception is that those reporting family incomes above $10,000 were less permissive when it came to notifying them regarding accidents, illnesses, or emergencies.

To what extent were responses influenced by how parents felt they ought to have treated their children or by selective memory distortions? There is no way to judge. Parents were involved by the task as indicated by the fact that slightly more than one-fifth of the respondents added spontaneous comments even though the questionnaire did not invite them. While this involvement could have increased memory distortion, it, along with the conditions of anonymity, suggests that most parents gave reasonably conscientious accounts.

Freshmen will be given greater responsibility for self-regulation in sexual relations than they experienced at home. The same will be true for smoking and drinking. Yet data suggest that parents expect, if anything, that their children will receive more supervision than they gave them at home. Apart from public relations problems suggested by this unrealism, an important question becomes whether freshmen are prepared to bridge this gap in their experience and how this occurs with optimum growth.

The disparity between parental expectations and university reality tells us something about the entering freshmen's parents. Parents must cope with a transitional period in their family's development, as they anticipate adjustment to their children's new status. The expectation of increased supervision at the university may reflect a temporary phenomenon: apprehension resulting from reactions to and fantasies about separation from their children.

The juxtaposition between parental concern about their children's educational and vocational decisions as exhibited by their responses regarding importance and their reluctance to exert any overt influence raises interesting questions. Apparently, parents share the cliché familiar to vocational counselors—the client, asked how his parents feels about his choice of vocation replies, "They want me to choose whatever will make me happy." Yet counselors often find that the client has distinct perceptions about the wishes of his parents.

One important use of these data might be their implications for university services designed to aid students in making use of opportunities for personal and intellectual growth afforded by their university experience. Should the minority of students who have experienced freedom in regulating their lives be permitted to live outside of university housing? How can the social system of regulation be adapted to the needs of those students who require more support for self-control than the majority? Are there adaptations to such individual differences to which instructors should be alerted? Are counseling services sufficiently directed toward aiding new students with problems in accelerating the development of self-regulatory resources and are such students sufficiently aware of the availability of this kind of aid? Answers to such questions can only come from study of freshmen at entrance and over time.

Watson v. United States, U.S. Court of Appeals for the District of Columbia, July 15, 1970

Defendant Watson appealed from a conviction for Federal narcotic offenses. At trial he raised the defense of insanity. He was undisputedly addicted to heroin, and the Government's case in trial court proved that there was found in his possession one-half of his daily dosage. Watson raised the issue of whether the Eighth Amendment, in view of the 1962 Supreme Court case *Robinson v. California* (which bars punishment of an addict merely for being an addict because addiction to drugs is an involuntary sickness) barred his exposure generally to criminal prosecution and punishment and, in particular, invalidated as cruel and unusual punishment the 10-year mandatory minimum prison sentence, "bereft of the ameliorative possibilities of suspension, parole, or probation," imposed upon him.

The Court of Appeals, sitting en banc because of the importance of the questions raised, left Watson's conviction undisturbed, but vacated the sentence and remanded the case to the District Court for resentencing. At resentencing, the lower court was directed to include consideration of the possible commitment of the appellant Watson under the provisions of the Narcotic Addict Rehabilitation Act of 1966.

The Court addressed the question raised by appellant that the *Robinson* case bars the punishment of a drug addict for possession of drugs for his own use. It found, however, that in the case presented resolution of this issue was not warranted. This was so because it is vital, the court felt, that a person charged with possession under the Federal narcotic statutes defend "clearly and unequivocally" on these grounds in the trial court. On the record before it in the instant case—the defense offered was insanity; the evidence did not exclude the possibility that the defendant was also trafficking in drugs; the affidavit supporting a warrant to search the defendant's home recited a sale to a police informer—such a clear decision could not be made, the opinion stated. In short, it felt that this was "not the kind of a record upon which either the trial or appellate court can confidently adjudicate a serious issue of statutory construction with constitutional implications." The court did, however, assert the position it would in all likelihood take in the future, noting that it believed that if *Robinson* means anything it must mean that Congress did not intend to expose the nontrafficking-addict possessor to criminal punishment; but it stopped short of this ruling for the reasons discussed above.

Although the conviction was sustained, the court did grant the defendant some relief. It found that Title II of the Narcotic Addict Rehabilitation Act of 1966, excluding from eligibility for treatment under the Act any defendant with two or more prior felony convictions, was unconstitutional, as a denial of the Equal Protection clause of the Constitution, as applied to him, and ordered his sentence vacated with directions that the district court on remand regard Watson as eligible for noncriminal disposition under the Title. An addict who, the court went on to say, at the time the 1966 Act

became law, did not have prior convictions is not disqualified from disposition under the "new and enlightened" provisions of the Act. Contrarily, one who, like defendant, had two criminal narcotics convictions before 1966 is denied the "rehabilitative possibilities of the new approach." When these two prior convictions are possible under a mere showing by the Government that the addict was in mere possession of the narcotic drugs, the court continued, "the discrimination between the two classes of addicts is constitutionally unacceptable." The court therefore held that the two-prior-felony disqualifying exclusion of Title II, as applied to appellant on these facts, is unconstitutional "under the concept of equal protection embodied in the Due Process Clause of the Fifth Amendment."

Judge Bazelon, dissenting in part, maintained that the instant case was the "appropriate vehicle" for reexamining the relationship between drug addiction and criminal responsibility. The insanity defense, he said, is very much involved, but District of Columbia instructions on insanity are inadequate to deal with the problem in a drug context. Judge Bazelon spoke approvingly about a suggestion made in a brief submitted by the American Civil Liberties Union *amicus curiae* proposing that an addict might claim "duress and involuntary" needs as a defense, akin to insanity, for possession of drugs.

Judge Robb dissented. He saw nothing unreasonable or arbitrary in the Congressional judgment that an addict who was twice previously convicted of a felony, whether before or after the effective date of the Act, is not a likely prospect for rehabilitation. He was opposed to the substitution of the views of the court for those of Congress, and voted to affirm both the conviction and the sentence.

Dixon v. Jacobs, U.S. Court of Appeals for the District of Columbia Circuit, April 10, 1970; 38 LW 2553

The patient Dixon was involuntarily civilly committed in 1964 pursuant to a mandatory hearing held after his acquittal, on grounds of insanity, of charges of murder and assault with intent to commit carnal knowledge. In 1969 he brought a habeas corpus petition to the district court, alleging that his mental condition no longer justified confinement, and asking for release. Two previous habeas corpus petitions had been denied by the court after full evidentiary hearing. The district court rejected the third habeas petition as "repetitive," and said that other remedies had not been exhausted. Dixon appealed to the Court of Appeals.

The Court of Appeals reversed. A petition for habeas corpus by a mental patient seeking his release on the ground that his present status no longer justifies commitment may, it held, be dismissed as repetitive only if that ground was adequately heard and determined adversely to the applicant in a judicial proceeding within 6 months preceding the new application.

The doctrine of exhaustion of administrative remedies relied on by the Hospital, the court further stated, does not require, as a prerequisite to Federal habeas corpus application, that the involuntarily committed patient seeking absolute release from mental confinement either have submitted within the past 6 months a written request for medical examination, or have exercised his apparent right to secure examination by an outside psychiatrist. There is a serious question whether the claimed administrative remedies exist, the court ad-

ded, noting that the district court "does not normally make a practice of appointing counsel to represent indigent patients seeking release until the questions involved here have been passed."

United States v. Carter, No. 22,912, June 5, 1970—U.S. Court of Appeals for the District of Columbia

Carter was found guilty, after having waived his right to a jury trial, on charges of both robbery and assault with a dangerous weapon. On appeal to the United States Court of Appeals for the District of Columbia he contended that the lower court erred by refusing to grant his motion for a directed judgment of acquittal upon the ground of mental illness. Without in any way challenging the allegations regarding his participation in the crimes charged, appellant, admittedly a narcotic addict, argued that the evidence of his narcotic addiction, when weighed with the testimony of two psychiatrists and a psychologist, should have compelled the trial court to grant the motion of acquittal by reason of insanity.

The Court of Appeals affirmed the decision of the lower court, relying on the trial judge's conclusion that "the crime became one of convenience rather than a crime of necessity" in rejecting the appellant's theory that the crime was "tied" to the mental disease. Three theories of productivity were rejected. First, while the court found that appellant was suffering from a mental illness, it rejected any suggestion that the robbery came as a direct response to this illness. Secondly, although the court found that appellant was addicted to narcotics, it concluded that "the drug addiction . . . was not so closely related to the perpetration of the crime as to be a factor . . . [Defendant)] was in control of his faculties . . . [T)]here was no compulsive or impulsive situation which caused him to do the acts which constitute the crime. He was able to plan and to execute it, and he was able to refrain." Third, while the court found that narcotics served appellant as "medicine for his anxieties," it rejected as "too tenuous" defendant's argument that he should be relieved of criminal responsibility for the crime because of a "claim of causation" leading from his illness through the addiction to the robbery.

Judge Bazelon, in a separate, concurring opinion, was troubled by fact that "under our present case law the evidence in this case provided no single answer to the complex question of criminal responsibility raised by the insanity defense." He launched into a rather lengthy comment on the criminal responsibility of a narcotic addict who commits a cime to obtain money to support his habit. Perhaps most noteworthy is his concluding argument:

"If we are to assign criminal responsibility by drawing a line between those who can and those who cannot exercise meaningful choice in their behavior, surely we mean something other than a mere choice between equally criminal alternatives. In the present case, we cannot even salve our conscience by the fiction of the voluntary addict: for appellant's addiction, on the evidence, stemmed from his need for "medicine" to alleviate the pain of his mental illness. It may well be that we simply lack the resources—to say nothing of the understanding—that would be required if those who stole to feed their addiction were removed from the criminal process on the ground that they are not responsible for their actions. But if this is so, we should recognize the fact, and not rationalize our treatment of narcotic addicts on

the false premise that their crimes are the result of a wrongful exercise of free will. It is to me intolerable that persons already crippled by an almost hopeless cycle of poverty, ignorance, and drugs should be further burdened by the moral stigma of guilt, *not* because they are blameworthy, but merely because we cannot afford to treat them as if they are not. If we are to maintain the insanity defense as a device for allocating criminal responsibility, we should live up to its terms. If we cannot do so, we should not pretend that we can.

". . . I have no difficulty in concluding that the present system is unsatisfactory. I doubt that we have either enough jails or even hospitals to hold the city's . . . addicts. . . . But . . . our problems are not solved by sweeping them under the rug of a doctrine that saves our face by hiding our troubles. If they are to be solved at all, they must first be brought into the open for confrontation."

Doe v. General Hospital of the District of Columbia U.S. Court of Appeals for the District of Columbia, March 20, 1970

The plaintiffs brought this action to compel D.C. General Hospital to give abortions to all women who desire them and who otherwise meet the standards for admission to the hospital. After a hearing, the district court made findings of fact and issued a preliminary injunction to restrain the hospital from refusing to perform therapeutic abortions under the hospital's own rules and regulations, as these were found by the court. On appeal, the plaintiff sought broader relief, but that motion was denied so the case could be fully briefed and argued. However, since each individual plaintiff was nearing the end of the first trimester of her pregnancy, the hospital was ordered to process their applications for abortions without delay.

Immediately after this order was entered, one plaintiff presented herself at the hospital and brought with her a letter from an area mental health clinic psychiatrist recommending that she receive an abortion in order to safeguard her mental health. However, the hospital insisted that she first submit to an examination by a private consultant to the Department of Health and advised her that no specific time for an abortion could be set in any event, since therapeutic abortion was viewed an an "elective procedure" and only emergency measures would be taken on afternoons, weekends, and holidays. The plaintiffs contended that the hospital's action was in contempt of the orders of this and the district court and moved to find the hospital in civil contempt.

The Court of Appeals ruled that the Hospital was not in contempt of court. While the order of the court required the hospital to perform an abortion upon "a recommendation by a psychiatrist," and neither this language nor the regulations as construed by the district court support the hospital's action in calling upon a private psychiatric consultant to scrutinize the diagnosis of an area mental health clinic psychiatrist; and while it does not appear that the services of a private consultant had ever been required by hospital policy in the past, the possibility cannot be completely ruled out, the Court of Appeals said, that the district court's order could be read to require strict adherence to the regulation that "two specific specialists" must concur in writing before an abortion could be performed, in spite of the prior practice to the contrary. Because of this possible confusion, the hospital was not ruled in contempt of court.

The Court of Appeals further stated that it expected that the hospital would devise interim procedures adequate to deal with such emergency situations as might arise during the pendency of this litigation. In view of the repeated conflict between the parties and the continuing inaction on the part of the hospital, it set forth conditions under which the hospital must perform therapeutic abortions on mental health grounds until this case is ultimately resolved on the merits: any woman requesting a therapeutic abortion on mental health grounds should be received and her application processed with due regard for the urgency of the matter. The hospital may inquire into residence, indigence, and previous medical history, and it may complete the other necessary admission procedures.

After this, the patient should be directed to a gynecologist who is willing to perform therapeutic abortions, and he may perform medical examinations and tests necessary to verify pregnancy, to ascertain the stage of development, and to identify possible medical contraindication to abortion. Psychiatric grounds for the abortion may be established by presenting letters of recommendation from two area mental health clinic psychiatrists at the time of the examination. If the patient has not previously seen a psychiatrist, the gynecologist should refer her to a mental health clinic or permit her to consult with a private psychiatrist willing to perform the service for the patient. The individual gynecologist will detemine whether one or two psychiatric evaluations may be required. He may require one or two recommendations from area mental health psychiatrists, or in lieu thereof he may accept recommendations from one or two private psychiatrists. If the applicant satisfies these criteria the abortion should be scheduled and performed without delay.

In re Lifschutz, California Supreme Court, May 15, 1970

A former patient of the psychiatrist (Lifschutz) brought an assault suit against a third person seeking mental distress damages. That defendant sought medical records possessed by the psychiatrist, who refused to produce them. The psychiatrist was adjudged in contempt of court and ordered to be confined after he repeatedly refused to produce any of his medical records and declined to answer any questions relating to his treatment of patients. Lifschutz in this proceeding asked for release through a writ of habeas corpus. He relied upon the privilege between psychotherapist and patient as rationale for his repeated refusals.

The Court denied the writ. The psychotherapist-patient privilege, the California Supreme Court found, can only be the privilege of the patient. The psychiatrist, it said, has no constitutional or other right to refuse to produce medical records. In this case, the former patient had neither expressly claimed a psychotherapist-patient privilege, statutory or constitutional, nor expressly waived such a privilege. In any case, the court added, the California statute contained an exception to the privilege against disclosure: a psychotherapist may be compelled to reveal revelant confidences of treatment when the patient tenders his mental or emotional condition in issue in litigation. Furthermore, the psychotherapist himself, the court said, does not assert a significant privacy interest separate from that of his patient, and he has no constitutional right to absolute confidentiality in his communications with patients.

The court gave more consideration to the psychiatrist's claim that proper treatment would be impossible unless

he could truthfully assure his patients that all they might say would be held in strictest confidence and never disclosed. It rejected this argument, however, pointing out that psychotherapy has "flourished" in an environment of nonabsolute privilege, and noting moreover that disclosure of only those matters that the patient himself has chosen to reveal by tendering them in litigation is compelled. And even when confidential information falls within this exception, the opinion continued, trial courts, "because of the intricate and potentially embarrasing nature of such communications, may utilize the protective measures at their disposal to avoid unwarranted intrusions into the confidences of the relationship."

Stating that it would be intolerable for the exception to the privilege to deter psychotherapeutic patients from instituting any general claim for mental suffering and damage for fear of opening all past communications to inquiry, the court added that communications not directly relevant to those specific conditions brought into issue by the patient-litigant do not fall within the terms of the exception and therefore remain privileged. The burden of proof, however, is on the patient to submit some initial showing that a given confidential communication is not directly related to the issue he has tendered to the court.

Finally, the court rejected the psychiatrist's argument that he was denied equal protection of the laws as there are no exceptions to the clergyman-penitent privilege comparable to the exceptions to the psychotherapist-patient privilege, and the modern clergyman acts as a "sanctuary for the disclosure of emotional distress," much like a psychotherapist. The court, however, distinguished the two privileges on a secular versus religious basis.

Wade v. United States, U.S. Court of Appeals for the Ninth Circuit, March 30, 1970; 38 LW 2576

Not wishing to stand "virtually alone" among the Federal courts of appeal, a divided (7–6) Court of Appeals for the Ninth Circuit here abandoned its updated M'Naghten insanity test (not only the "right-wrong" standard but an "uncontrollable act" element as well) and adopted in its stead part of the criminal responsibility test of the American Law Institute's Model Penal Law. Almost every other Federal court of appeals in recent years has abandoned the old M'Naghten test; only the First Circuit, which has not considered the question for several years, has not explicitly abandoned M'Naghten.

Under the new test, proof that a criminal defendant, as a result of a mental disease or defect, lacked substantial capacity either to appreciate the wrongfulness of his conduct or to conform his conduct to requirements of law now constitutes a defense to criminal charges in the Ninth Circuit. The Ninth Circuit agreed with the Second, Fifth, and Seventh Circuits in adopting the alternative recommendation of the American Law Institute, whose preferred test states in part that criminal responsibility is lacking if, at the time of the offense, the offender "lacks substantial capacity . . . to appreciate the criminality of his conduct. . . ." The Ninth Circuit substituted "wrongfulness" for "criminality." The Ninth Circuit rejected however, the second paragraph of the ALI test, which provides that "the terms 'mental disease or defect' do not include an abnormality manifested only by repeated criminal or otherwise anti-social conduct."

The new test, the Court stated, abandons the "openly apparent. . . weaknesses and dangers" of the traditional M'Naghten criteria and adopts language that "best incorporates the volitional and cognitive elements of criminal responsibility."

Scheidt v. Meredith, 307 F. Supp. 63, U.S. District Court for Colorado, January 7, 1970

Petitioner was committed to the Colorado State Hospital in 1961 following a plea of not guilty by reason of insanity to criminal charges and a jury finding that petitioner was insane at the time of the acts charged. In 1964 the hospital Superintendent notified the court that in his opinion petitioner was no longer insane and was eligible for discharge under the Colorado statute. Petitioner then was transferred to the Colorado Psychopathic Hospital for examination as to his present legal sanity; and an independent examination by two specialists was also ordered. At a subsequent hearing, three psychiatrists testified and all were of the opinion that petitioner was sane and could be released, but that some form of followup care and psychiatric observation or supervision should be established. Petitioner testified at the hearing that a probationary release would not be acceptable to him—i.e., that he would rather be returned to the State hospital than be released on probation. The court denied petitioner discharge or probationary release, found that he had not satisfied the court as to his sanity, and ordered petitioner remanded to the State hospital. Pending appeal to the Supreme Court of Colorado, petitioner escaped from the State hospital. He was taken into custody 2 years later and was returned to the Hospital. Petitioner instituted a habeas corpus proceeding for release from the Hospital, claiming that (1) the original refusal to release him was in error and (2) he had during the 2-year period at large made a good adjustment.

The court ruled in favor of petitioner. A judgment which places one adjudged not guilty by reason of insanity of criminal probation (testimony indicated that the conditions imposed upon a person granted probationary release under the statute were, as a matter of practice, the same conditions imposed upon a convicted criminal placed on probation) or, upon refusal to accept such terms, remands him to indefinite custody, it said, violates Fourteenth Amendment rights as an invalid deprivation of liberty without due process. The lower court's conclusion at the hearing that petitioner was not sane or entitled to probationary release could only, the Federal court said, have been grounded upon petitioner's refusal to accept probationary terms upon his release. The imposition of such conditions on one who has not been convicted of a crime, the court held, is unconstitutional, and petitioner could not be denied his release based on his refusal to accept the conditions. As petitioner was found not guilty of the crimes charged by reason of insanity—not legally responsible for the acts committed—and was not a convicted criminal, he could properly be committed to a hospital for treamtent and custody until he regained his sanity; but as criminal sanctions can not be imposed against persons who have committed no crime, once petitioner was restored to sanity he should have been given complete freedom, his release not being conditioned on terms having no relation to his status.

Beard v. Wymen, U.S. District Court, Southern District of New York, July 8, 1970

A New York City Department of Social Services procedure required narcotic addicts who were capable of benefiting from treatment to submit to rehabilitation therapy as a condition of home relief (welfare assistance). Plaintiffs were rehabitable narcotic addicts. They asked the court for a preliminary injunction against enforcement of this regulation.

The court denied the request, refusing to enjoin the procedure. No narcotic rehabilitation program would be available to plaintiff for at least a year and a half, the court said; all that plaintiffs presently were required to do was get on the waiting list of some program. Assistance, however, would be given in the interim. Furthermore, the procedures provided for a hearing to review any determination of addiction or amenability to treatment, during which time assistance was granted. Accordingly, the plaintiffs failed to show that the denial of the preliminary injunction would result in any immediate irreparable injury to them, a prerequisite for the granting of such relief pending trial of the case.

In re Director, New York Supreme Court, Queens County, March 13, 1970

A man suffering from mental illness was sent for treatment to a State institution for the mentally ill. After some time there, he was found by the hospital to be free from mental illness. His family refused to care for him if he were released, and the hospital, the courts, and the Mental Health Information Service were unable to find suitable alternative arrangement. The patient asked to be released.

The court, finding the man no longer mentally ill "beyond dispute," ordered him released. The sole function of the court, it said, is to determine whether the patient is mentally ill and requires further retention for those purposes. Since his competence is admitted, the court continued, the patient is not eligible to remain at the public (State) hospital, and must be ordered discharged. Although there is merit, the court concluded, in "being our brother's keeper," this philosophy cannot be practiced contrary to the purpose and intent of the New York mental hygiene law.

Note: These summaries are based on materials prepared by the NIMH's Legislative Services Branch.

The *Mental Health Digest* issue of July 1970 contained a condensation of an article entitled, "Communications to Clergymen—Where Are They Privileged?" The article was first published in its entirety in the Spring 1968 issue of the Valparaiso University Law Review which has the rights to the article and the condensation. The author of the article has asked us to caution the readers of the condensation that material for the article was researched in 1967 and that in some States there have been developments in statutory or in case law since that time. Therefore, the reader of the article should not rely entirely upon the contents of the article as to the current status of the law in any given State.

Mental Health News Digests

Alcoholism in Alaska

Alcoholism in Alaska is a newsletter published by the Office of Alcoholism in Alaska. Volume 1, No. 1 reports that the sixth Alaska State Legislature passed and funded a community grant-in-aid program for alcoholism. The bill provides that nonprofit corporations, city, or borough governments or other political subdivisions are eligible for funds. Applications are submitted to the Office of Alcoholism and awards are made by the Department of Health and Welfare with the advice of the Advisory Board on Alcoholism. Grants will be awarded in a ratio of 75 percent State money to 25 percent community money for both staffing and renovation or construction of facilities.

The Office of Alcoholism has completed a study of public offenders in Alaska comparing Caucasian and Alaska Native offenders. Some of the findings were: More natives were single, had never been married, had one or more dependents, had fewer years of education, had relatives who had been in jail, and were more often charged with Offenses against the Public (which includes the charge of Drunk-in-Public) while Caucasians were charged with more Physical Offenses against Specific Persons. The report concludes that the large number of arrests of Native for offenses involving drunkenness indicates that there is a large group of Caucasians who are *not* being arrested for these offenses because they share socioeconomic characteristics which serve to protect them from arrest. Drunkenness arrests of Natives appear to be symptomatic of other problems, mainly concerned with adaptation to urban settings.

The address of the newsletter is Office of Alcoholism, Department of Health and Welfare, Pouch H, Juneau, Alaska 99801.

New Drug Treatment Program in Georgia

Last June the Georgia State Board of Health, recognizing the growing problem of drug abuse, called for a "crash program" to combat the problem. Since then two important steps have been taken. The Georgia Mental Health Institute has opened a 29-bed cottage to treat drug dependent patients and has also started a "drug info line" telephone service.

The treatment program is primarily for outpatients. It will have a "continuous, open-door clinic," where a potential patient can come at his convenience, join an "inquiry" group, look over the program, and decide if he wants treatment. If he embarks upon the treatment program, he is given a complete physical and psychological examination. Patients requiring acute detoxification are referred to other facilities, but plans do call for opening an inpatient clinic. Therapy is both group and individual, and includes music, recreational, and occupational therapy, as well as vocational rehabilitation.

The 24-hour drug info line is closely tied in with the clinic program. Plans also call for a drug information center and for working with the families of drug addicts. (From *Georgia's Health,* Vol. 1, No. 8.)

Highlights of the 78th Annual Convention of the American Psychological Association

Man's relationship to his environment, student dissension, women's liberation, race relations as well as recent developments in the entire

field of psychology were all topics for discussion, research reports, and symposia at the APA meeting in September.

The Presidential Address by Dr. George W. Albee was on "The Uncertain Future of Clinical Psychology." Dr. Albee stated that he believes that the field of clinical psychology is threatened with extinction unless drastic changes are made, and that "I fear the basic incompatibilities between the science of psychology and the profession of psychology may be so serious as soon to require a separation or divorce." Looking ahead 10 or 20 years, he predicted there will be an American Scientific Psychological Association and an American Professional Psychological Association. Dr. Kenneth Clark is now President of the APA, and Dr. Anne Anastasi is President-Elect.

The annual meeting is always the occasion for announcing awards. Drs. Freda Gould Rebelsky and Fred S. Keller were honored as the first recipients of the American Psychological Foundation's Distinguished Teaching Awards. Dr. Sidney L. Pressey received the Gold Medal Award, which is given to a senior psychologist in recognition of a distinguished and long-continued record of scientific and scholarly achievement. The Distinguished Scientific Contribution Awards went to Drs. David Krech, R. Duncan Luce, and Donald T. Campbell. Dr. Krech was honored for his "brilliant and creative" work as both a teacher and researcher in animal psychology, social psychology, and physiological psychology. Dr. Luce was cited for "his leadership in the development of theories that range from social behavior, to learning and memory, to perception and psychophysics. By his judicious use of mathematical methods he has contributed significantly to the development of psychology as a quantitative science," and Dr. Campbell for "his wide range of contributions in psychological epistemology, social psychology, and research methods." Dr. Calvin W. Taylor received the Richardson Creativity Award which is presented annually for the most outstanding contribution during the preceding year or recent years toward improving creative or innovative talents or developing or utilizing such talents." Dr. Frank Stanton received the annual award of the American Board of Professional Psychology. The ABPP is a separately incorporated board concerned with the certification of psychologists.

The APA has announced that it is now publishing a monthly newspaper, the *APA Monitor*. Its purpose will be to report relevant and timely news about the APA membership and general news affecting the behavioral sciences. It will include *The Washington Report,* which provides a monthly look at Federal legislative activities which pertain to psychologists, as well as editorials, a letters-to-the editor column, classified advertising, and general display advertising.

Publications on Drugs

Youthful Drug Use reports on nine drug-abuse projects supported by the Youth Development and Delinquency Prevention Administration of DHEW's Social and Rehabilitation Service. The authors, Richard Brotman and Frederick Suffet of New York Medical College, conclude that illegal drug use is a "complex phenomenon which involves various forms of drugs, drug users, theories of causality, consequences of drug use, and forms of control" and that "most people in the field are now ready to admit that we need to know what works for what kinds of drug use and for what kinds of people." Copies may be purchased

from the Government Printing Office, Washington, D.C. for 30¢.

A 36-page, bound *Guide to Ideas on Drug Abuse Programs and Policies* compiled by Paula Gordon, drug abuse consultant and chairman of the Committee for Psychedelic Drug Information in Berkeley, is now available. This group is a nonprofit educational organization devoted to drug abuse prevention and education. The *Guide* includes a wide variety of material: summaries of various drug abuse programs currently in operation; ideas concerning possible changes in approaches to the drug problem in general; ideas concerning the use of media in drug abuse education efforts; utilization of former drug users in drug abuse programs; tips on counseling techniques; a summary and a budget for a drug abuse counseling program in a San Francisco Bay Area high school; and an outline of an MA curriculum for drug abuse education. Other publications of the C.P.D.I. are included with each copy of the Guide: reprints of articles by Dr. Allan Y. Cohen, a message to junior high school age youth who may be involved in drug abuse, and a 4-page selected bibliography with particular reference to the most recent LSD and marijuana research. A contribution of $2.50 for each copy of the *Guide* will help defray printing expenses. Address your requests to C.P.D.I., P.O. Box 851, Berkeley, Calif. 94701. All contributions are tax deductible.

Television and Telecommunications

A repeat performance of the Mental Health Materials Center's seminar "The Role of Television and Telecommunications in Mental Health Information and Education Programs" has been set for November 30–December 4 in New York City.

Designed to meet the needs of education and information specialists, the seminar will again include disscussions led by Edward Wallerstein, noted telecommunications expert, exchanges of ideas and experiences by the participants, demonstrations of outstanding programs, and actual use of telecommunications equipment. Emphasis will be placed on types of TV systems (closed circuit, master antenna, cable) and the characteristics of each. Discussions concerning equipment will emphasize types of cameras, monitors, and videotape recorders available and cost, plus suitability, in terms of specific program needs. Seminar participants will work with the cameras, videotape recorders, monitors, and special effects equipment while making their own programs. Field trips to production centers and specialized TV installations will provide the participants with actual contact with the medium as it is now being used.

Future seminars with similar programs have been planned for January, April, and June 1971. For information write to the Mental Health Materials Center, Inc., 419 Park Avenue South, New York, N.Y. 10016.

Compehensive Drug Abuse Prevention and Control Act of 1970

The Comprehensive Drug Abuse Prevention and Control Act of 1970 expands the Federal programs for rehabilitation, treatment, and prevention of drug abuse. It amends the Community Mental Health Centers Act to make "other persons with drug abuse and drug dependence problems "eligible for its prevention and treatment programs." In the Narcotic Addict Rehabilitation part of the Centers Act only "narcotic addicts" were specifically covered.

A new "Drug Abuse Education" section is added to the Centers Act. The Secretary of DHEW, acting

through the National Institute of Mental Health, is authorized to make grants for development of materials and curricula dealing with drug abuse education, to train professional personnel and others to work in this field, to coordinate all Federal programs dealing with the health aspects of drug abuse education, and to serve as the focal point for the dissemination of information about drug abuse.

The new Act authorizes a program of special project grants to public or nonprofit private agencies to meet part of the costs for detoxification services, or institutional services, or community-based aftercare. Priority must be given to States and areas within States that have the highest percentage of drug-dependent persons in the population.

Several amendments were made to the Public Health Service Act. The provisions pertaining to care and treatment of narcotic addicts in PHS Hospitals were amended to broaden the applicability to include "other drug abusers" as well as narcotic addicts. This does not, however, apply to persons committed under the Narcotic Addict Rehabilitation Act of 1966. Another new subsection permits the Secretary to authorize anyone engaged in research on the use and effects of drugs to withhold names or other identifying characteristics of the subjects from anyone not connected with the research. Another section which covers State Plans for the provision of public health services is amended to require that such plans "provide for services for the prevention and treatment of drug abuse and drug dependence, commensurate with the extent of the problem." Finally, another section of the PHS Act which permits grants for research, training, and demonstrations under the Act to be made to Federal institutions is amended to include any grants made under the New Drug Abuse Act and any construction or staffing grants authorized under the Centers Act for the basic program, for alcoholism or for drug addiction or dependence, at 100 percent funding.

In a section dealing with medical treatment of narcotic addiction, the Secretary of DHEW is authorized, after consultation with the Attorney General and appropriate national nongovernmental organizations, to determine acceptable methods of medical practice in treating various classes of narcotic addicts and to report these determinations from time to time to the Congress.

In another section of the Act, a commission on marihuana and drug abuse, composed of two members from each House and nine members appointed by the President is to conduct a study of all aspects of marihuana use, particularly the efficacy of existing marihuana laws. The study is to be completed in 1 year, and a report given to the President and the Congress. The commission is also to conduct a separate study on the causes of drug abuse in general and report on this within a 2-year period.

Other sections of the Act relate to enforcement functions of the Attorney General, including the Attorney General's authority for education and research on enforcement-related topics, authority to determine the classification of drugs to be controlled based on scientific information provided by the Secretary of DHEW, registration of researchers, quotas for manufacturing and importation, exportation, and offenses and penalties.

For Further Information—

The *Mental Health Digest* contains condensations of journal articles and other materials. The condensations must of necessity omit many details, especially those concerned with methodology and discussion. The original articles also often contain excellent reference lists and bibliographies. Readers interested in particular digests are therefore urged to consult the journal or other source in which the material first appeared or to ask the author for reprints. Addresses of authors whose articles are digested in this issue are listed below. If an article has multiple authors, only the first author or the author from whom reprints may be obtained is given.

Joseph Adlestein, M.D., Deputy Secretary for Mental Health and Mental Retardation, Department of Public Welfare, Harrisburg, Pa. 17120.

Julius Axelrod, Ph.D., National Institute of Mental Health, 5454 Wisconsin Ave., Chevy Chase, Md. 20015.

H. Spencer Bloch, M.D., Judge Baker Guidance Center, The Children's Hospital and Medical Center, Boston, Mass. 02115.

Dr. Edward S. Bordin, Student Affairs Counseling Office, University of Michigan, Ann Arbor, Mich. 48104.

Hilda Bruch, M.D., Baylor College of Medicine, Houston, Texas 77025.

Stanley Einstein, Ph.D., Coordinator, Drug Abuse Education, Department of Public Health and Preventive Medicine, New Jersey College of Medicine, New York, N.Y. 10025.

Dr. Gerhard Freund, Veterans Administration Hospital and Department of Medicine, University of Florida, Gainesville, Fla. 32601.

Dr. Abraham Gelperin, Associate Professor, Department of Preventive Medicine, University of Illinois, College of Medicine, Urbana, Ill. 61801.

Jack H. Mendelson, M.D., Boston City Hospital, Psychiatry Service, 249 River Street, Mattapan, Mass. 02126.

Arthur D. Moffett, M.S.W., Director of Research, Narcotic Research Unit, West Philadelphia Community Mental Health Consortium, Philadelphia, Pa. 19104.

B. Pollak, M.R.C.S., L.R.C.P., General Practitioner, 8 Macaulay Road, London, S.W. 4, England.

Robert Reiff, Ph.D., Associate Professor of Psychiatry, Albert Einstein College of Medicine, Yeshiva University, New York, N.Y. 10033.

Additional information may also be obtained from the National Clearinghouse for Mental Health Information, which maintains a comprehensive scientific and professional information service on all aspects of mental health. Inquiries may be addressed to:

National Clearinghouse for Mental Health Information
National Institute of Mental Health
5454 Wisconsin Avenue
Chevy Chase, Md. 20015

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mental health digest

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